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the fact that the *de novo* synthesis of cholesterol is inhibited by the presence of dietary cholesterol.

There is a strong correlation between the amount of cholesterol in the diet and the amount of cholesterol in the blood.

The amount of cholesterol in the blood is also influenced by the amount of cholesterol in the liver.

The amount of cholesterol in the liver is influenced by the amount of cholesterol in the diet.

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HEALTH RESORTS AND SPAS;  
OR,  
CLIMATIC AND HYGIENIC  
TREATMENT OF DISEASE.

BY

HERBERT JUNIUS HARDWICKE, M.D.,

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LONDON:

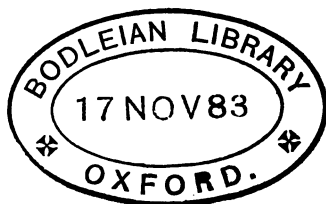
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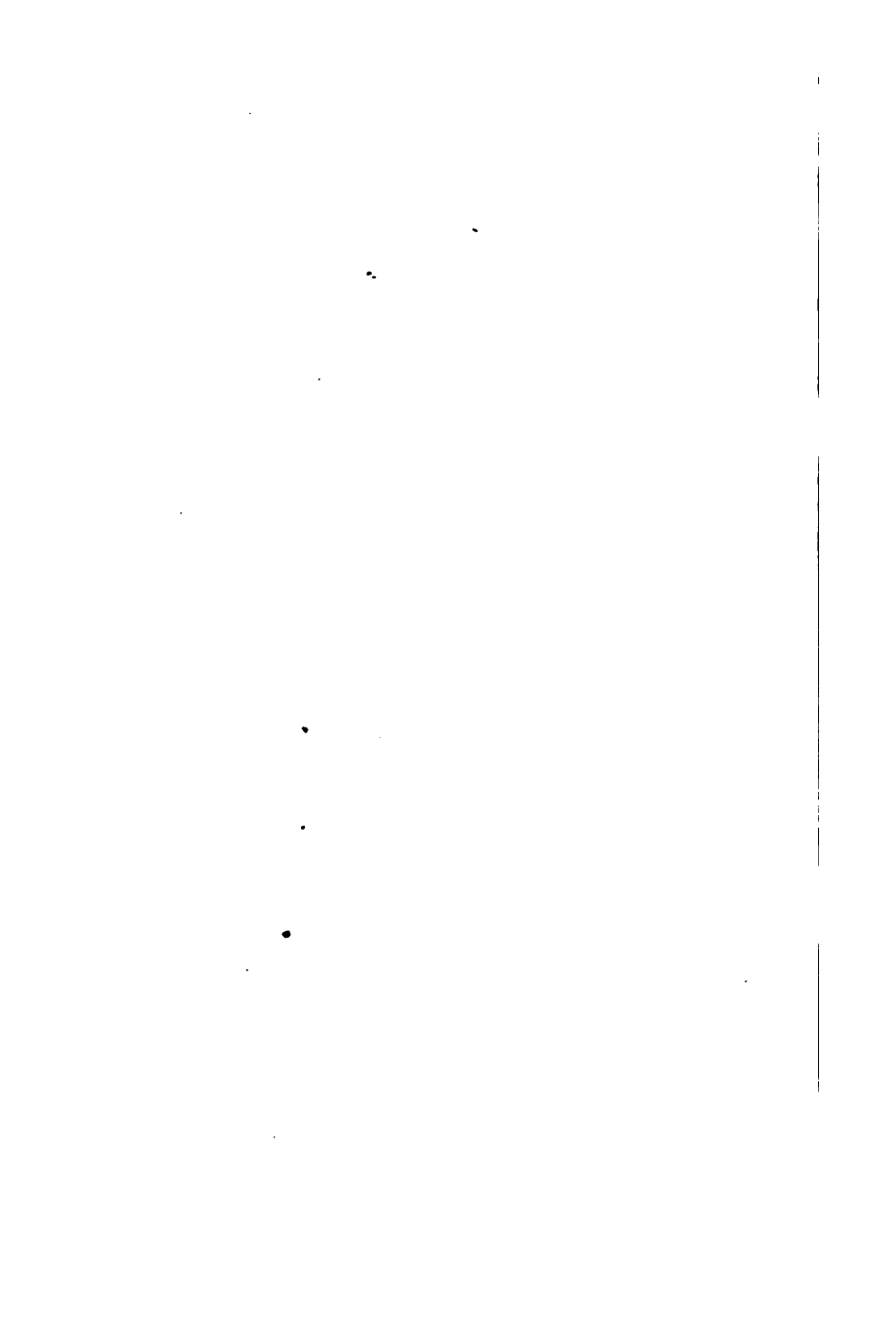
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TO HIS FATHER,  
JUNIUS HARDWICKE, OF CHILTON LODGE,  
M.D., F.R.C.S. ENG.,  
SENIOR CONSULTING SURGEON TO THE PUBLIC HOSPITAL AND  
MEDICAL OFFICER OF HEALTH FOR THE BOROUGH OF ROTHERHAM;  
AND  
TO THE MEMORY OF HIS GRANDFATHER,  
WILLIAM HARDWICKE, OF DIAMOND HALL,  
SOLICITOR;  
PROCTOR AND REGISTRAR OF THE ROYAL PECULIAR OF BRIDG-  
NORTH, IN THE DEANERY OF LICHFIELD;  
THIS BOOK  
IS AFFECTIONATELY DEDICATED  
BY THE AUTHOR.





## P R E F A C E .

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THE prevention and treatment of disease by climatic considerations and hygienic precautions, has occupied the minds of many eminent writers for some time back, and the valuable results of their untiring researches and investigations have been placed before us in various shapes and forms, with the view of circulating amongst those so deeply interested in the subject the vital truths connected therewith. With such an array of well written works on the subject, it would ill become one of comparative obscurity like myself to attempt to unfold the truths so well and ably enunciated by others before me, were it not for the fact that most authors on this subject have hitherto written for the edification of the medical world alone, and not for that vast army of invalids whose daily avocations consist almost

entirely in battling against their formidable foes—weather and insalubrity. My endeavour will be, in treating my subject, to avoid technicalities as far as practicable, and to place before my readers the salient points as clearly and concisely as possible, in the hope that what I am about to write, may be of some practical use to some few of my fellows, whose lots, owing to no fault or indiscretion of theirs, but perhaps to hereditary and other misfortunes, are not so easy to bear as they might be.

That climate has a marked influence on the human body, is no mere hypothesis, but the experience of every-day life, borne out by scientific investigations and innumerable statistics, and therefore I shall not attempt to prove this thoroughly well established fact, but shall at once plunge *in medias res*, and endeavour to point out the peculiar characteristics of the different climates and the advantages and disadvantages of the various health resorts and spas in this country, on the continent of Europe, and in Northern Africa.

I must just mention, however, that since the following pages have been compiled Mr. Wm. Van

Lieben of Sheffield has manufactured, from prescriptions of my own, an antiseptic skin soap for the purpose of preserving the skin in a healthy and vigorous condition ; and also a throat lozenge, for the prevention of congestive and irritable conditions of the mucous membrane of the air passages, both of which articles will be found particularly useful by invalids undergoing change of air and visiting foreign places.

PURTON LODGE, WOSTENHOLM ROAD,  
SHEFFIELD, *April* 1883.

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N O T E .

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In describing the various atmospheric temperatures, Fahrenheit's scale has been used throughout, except where otherwise stated.

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ERRATA.

Page 4, line 17, "Koumiss" *should read* "Kirghis."  
Page 77, last line, *omit* "(F.)"

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# OLD WORLD HEALTH RESORTS AND SPAS.

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## CHAPTER I.

### TREATMENT OF DISEASE BY CLIMATE.

CONSUMPTION of the lungs, or phthisis, as it is called, heads the list of those maladies which are peculiarly influenced by climatic considerations; and had it not been for the ravages of this disease amongst our people, we should not be in possession of such valuable information regarding the various climates of the world as we are at present. This fearful affliction, whose causes almost entirely depend on climate and soil, is found in all latitudes and races, and no age is entirely exempt from it; it is both hereditary and acquirable, and often remains latent in the system of an individual, or in a family, for an indefinite period of time, being perhaps called into active existence by some other disease, some injury, or by the performance of some natural function. It is found at the equator, where the

mean temperature is 80° F., as well as in the very coldest climates; although it has been stated that it assumes slightly different characters in each extreme of climate, being of an inflammatory character and generally chronic, and associated with catarrh in very cold climates, and in very hot ones running an acute course with febrile symptoms. Thus it would seem that there are different kinds of the disease met with in different quarters of the globe, or that all people are not equally susceptible to the influence of climate. For instance, at Gibraltar, the phthisis mortality amongst white people is 5·3 per 1000; whilst amongst negroes it is 48 per 1000. This remarkable difference is not observed in many other localities, though it is generally admitted that negroes succumb to phthisis in most parts of Europe more readily than white men, but whether the reverse is the case in the equatorial districts of Africa is a question that cannot yet be settled. We know that in some of the northern districts of Africa white people not only do not become a prey to phthisis, but that consumptives are actually benefited by a sojourn there. It is also beyond doubt that some forms of phthisis are benefited by one particular kind of climate, and another by another kind, and that what is injurious in one case is found to be of service in another. It is generally believed that high ground offers the greatest immunity from phthisis, provided it is well sheltered and otherwise

salubrious, though many people still bow allegiance to the very low temperature and the ague theories. In support of the high-altitude theory, it has been stated that at Hamburg and Marseilles, both of which places are at the sea-level, there is a greater phthisis mortality than at higher situations, and that the St. Bernard Mountain is remarkably free from this disease. Then, again, in Switzerland, the phthisis mortality has been shown to be immensely in favour of this theory, for in the low regions within 1,650 feet of the sea-level, the mortality is 10·2 per cent., in the medium altitude, between 1,650 feet and 2,700 feet above the sea-level, it is 9·4 per cent., and in the high altitudes, between 2,700 feet and 4,000 feet above the sea-level, it is 5·1 per cent., whilst in the districts above 4,000 feet from the sea-level there is an absence of phthisis altogether. It is this that makes the Upper Engadin, which lies between 5,000 and 6,000 feet above the sea-level, and Davos-am-Platz, which is rather lower down, so celebrated as residences for consumptives. Then, again, in the Peruvian Andes, at Lima, Cerropasco and Huanuco, phthisis is unknown, as also it is at all places in that district lying above 8,000 feet from the sea-level, while it is common enough in the lower districts nearer the sea-level. All this seems strongly to favour the high-altitude theory, the good results of which are by some authors said to be due to <sup>1</sup> increase of the appetite and digestive powers, an



others, to the inhalation of rarefied air, which causes an increase in the capacity of the lungs and chest. The opponents of this theory declare that the above statements go for nothing, until the fact can be explained that the nomads of the Kirghis land, a steppe situated 100 feet below the sea-level, in Asia, are quite exempt from phthisis. This is certainly somewhat curious, and is accounted for by many people by the fact that these tribes feed largely on koumiss, or fermented mare's milk, which contains a plentiful amount of lactic acid, carbonic acid, and alcohol, and is a very agreeable and refreshing drink. The effects of this fermented milk are a tendency to fat, and a sense of comfort, but it is very doubtful whether it possesses the curative properties in phthisis that are attributed to it. In spite of the koumiss difficulty, it is generally admitted that high, warm, and dry elevations, with their greater clearness of atmosphere, and consequent intensity of power in the sun's rays, combined with the lower barometrical pressure, will certainly procure great immunity from phthisis. The height of a place above the sea-level affects the temperature  $1^{\circ}$  for every 400 feet of altitude, and influences the pressure of the atmosphere, which at sea-level amounts to nearly fifteen pounds on every square inch of the surface of the body, and rapidly diminishes as we ascend above this. It must be borne in mind that the lessened atmospheric pressure of mountain re-

sorts affects also the balance of the circulation, often causing congestions or hæmorrhages, and therefore they are contra-indicated for people predisposed to hæmoptysis, or bleeding from the lungs.

Believers in the cold theory declare that in Norway, Sweden, Iceland, the Faroes, the Orkneys, and Greenland, phthisis is exceedingly rare, but this is by no means satisfactorily proved, and numbers of people who have visited all these places, state that it is the reverse of the fact.

The ague theory is, that wherever ague is prevalent, phthisis is unknown, and that in ague districts where drainage has been effected, and ague thus driven forth, phthisis has immediately broken out. Lincolnshire, with its fens, is quoted as a locality where phthisis is almost unknown, but from my own personal experience I can contradict this emphatically.

So much for the three chief theories of immunity. The evidence is at present in favour of the high-elevation theory, but it must not be imagined that the elevation is all that must be considered in looking for a suitable locality for consumptives. The purity of the air, variations in temperature, aspect, situation with regard to surrounding hills and woods, water-supply, drainage, &c., must all be very carefully taken into consideration. One of the most necessary conditions for a healthy climate is purity of air, by which I mean freedom from malaria or miasms

emanation, or from atmospheric contaminations produced by over-crowding, or evolved by manufacturing or chemical processes. Fresh air has a rapid and powerful effect on both the healthy and the sick, giving a tonic influence to health and nutrition, and to the blood formation. Crowded workshops and dwellings, badly ventilated and closely built in large towns and manufacturing districts, are the propagating centres of phthisis; and removal from such hot-beds of disease to the fresh air of the country, the sea-shore, or the mountains, will often snatch the unhappy victim from the jaws of death, and place him on the road to speedy recovery. In estimating the purity of air, too much importance must not be attached to the relative proportions of the oxygen and nitrogen of the atmosphere, though these vary a little in towns, country, sea-shore, and mountains, and also in various latitudes. More attention should be paid to the existence or absence of noxious agents in the atmosphere, the result of the accumulation, stagnation, and decomposition of refuse matters.

It is almost impossible for free ventilation to take place in towns where the streets and houses are crowded together, and where there are usually several families living under one roof; by which the atmosphere becomes loaded with impurities, which act as disease-producers in the bodies of the unfortunate residents. There is in such places very little ozone

in the atmosphere, while in the country, and at the sea-shore, the air is exceptionally rich in it, and on that account has a far greater chance of keeping pure and free from poisonous admixtures, for ozone, which is a condensed form of oxygen, has the power of destroying gases caused by organic and inorganic decompositions floating in the air, and is always found more particularly in atmosphere which is more under the influence of the sun's rays, or which is influenced by vegetation. It has also been found to stimulate the formation of blood-corpuscles. In mountain places, and at the sea-side as a rule, the atmosphere contains very few dust particles, and hardly ever *organic* dust particles, which are supposed to consist of fungous spores, and are the main channels by which miasma enters the system. In towns, on the contrary, the air is often loaded with all kinds of noxious gases, such as carburetted, phosphoretted, and sulphuretted hydrogen, ammonia, and excess of carbonic acid, which poison the blood and interfere with the proper functions of the breathing apparatus. Vegetation plays an important part in the purification of the air, and in rendering it salubrious, the resinous evaporations of trees and shrubs possessing a very important influence, and giving to some places a world-wide reputation. The natives of Central and Southern Europe are fully alive to the value of vegetation, both in protecting them from the sun's rays and in purifying the atmosphere.

and in almost all their towns of any importance, the principal streets are lined on both sides with trees.

It is true that the higher we go from the sea-level, as a rule the cooler becomes the atmosphere, and this, at first sight, would lead one to suppose that very high elevations could not be very safe places for consumptives to reside in ; but the fact is that the mean temperature alone of a place, whether hot or cold, is no criterion of its climate as a health resort, being of far less importance than the rapidity and frequency with which it changes from its highest to its lowest temperature, the choice falling, *ceteris paribus*, not on that place which has the warmest climate, but on that which is most equable. Then, again, the effects of an equable temperature depend on the dryness or moisture of the atmosphere ; and therefore the chief point to be decided in looking for a health resort is, whether an equable climate is dry or tonic, or whether it is humid or sedative, for the difference is enormous to an invalid. A dry, warm air stimulates the action of the heart and lungs, and causes the skin and liver to act freely, and the kidneys to act but slightly, and is totally unfit for febrile and nervous ailments, dry asthma, irritative phthisis, liver and skin diseases ; but very beneficial in chronic bronchitis, chronic rheumatism, scrofula, debilitating discharges, and moist asthma. Sedative climates, on the other hand, cause the skin and liver to act freely ; and the air contains less oxygen than dry

air does, which causes hurried breathing, imperfect respiration, and less nervous energy and muscular power, the result being that, owing to the less energetic combustion, fat is produced by assimilation of the carbo-hydrates. Such a climate is suitable to spasmodic asthma, some forms of bronchitis, irritable mucous membrane of the lungs, hard dry cough, and many wasting diseases. As a rule moist climates are more equable than dry ones, and very frequently have far clearer and purer atmospheres. It must not be imagined that the driest air is always the clearest and purest, for the most transparent and bluest atmosphere is that immediately preceding a heavy fall of rain, when the particles of dust floating about are rendered heavier by the moisture, and fall to the ground ; and in the tropics it is commonly observed at midnight that the atmosphere is clearest when there is a heavy dew. At the same time clouds and mist are not always standards of dampness ; for many very damp places, such as Madeira and Pisa, are never visited by mists, and such dry places as Nice and Hyères are often visited by profuse mists. A place may be very damp, and yet have rain comparatively seldom, unless the condensing and cold currents of air be frequent ; a constant fall of rain being merely a sign of moisture combined with frequent change of wind. Madeira and Pau have more moisture in the air than any other important health station, but Madeira has 98 rainy days, with an average rainfall

of 80 inches of water, whilst Pau has 140 rainy days, with an average rainfall of 48 inches. Venice, which is almost as damp a place as Pau, has yet only 84 days of rain. These differences are owing to the more frequent condensing currents of air at Pau than at Madeira and Venice. Then, again, some places have much greater rainfalls than others, but far less rainy days in the year. Hyères, for instance, which is a dry place with only 62 rainy days, has as great a rainfall as Madeira with its 98 rainy days; and Cannes, with its 52 rainy days only, has a greater annual rainfall by 5 inches than London with its 178 rainy days.

Generally speaking, the early stage of phthisis requires a dry, warm, sea-side winter climate, such as the North Coast of Egypt, the coast of Western Australia, or Malaga; the second stage requiring a more sedative climate, such as Rome, Pisa, Madeira, Queenstown, or Torquay. For the third stage, the greatest care should be exercised in the selection of a winter residence, as the patients are often not fit to travel far, or for a long time together. Torquay, Bournemouth, Hastings, Ventnor, and Worthing are convenient and suitable for this class. Of course, in selecting a winter residence the force and direction of the prevailing winds should be always studied with a view to their avoidance. Also it should be borne in mind that in all southern climates there is generally a rapid and sudden decrease in the tem-

perature after sunset, and a heavy fall of dew during the night, this being more noticeable in dry than moist climates ; and therefore, in such places, it is advisable *always* to wear flannel in winter and summer alike, no matter how hot the air is.

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## CHAPTER II.

## PROPERTIES AND USES OF WATER.

A PLENTIFUL supply of good water should be a *sine quâ non* at all health resorts, without which there cannot possibly be enjoyment of good health, for water forms an important item in all the tissues of the body, even of the hardest and driest, muscle containing 70 per cent., the saliva in the mouth possessing 98·45 per cent., the gastric juice of the stomach 98·7 per cent., the gall 86 per cent., the juice of the pancreas, or sweetbread, 98·5 per cent., the intestinal fluid 97 per cent., chyle 90 per cent., lymph 96 per cent., milk about 88 per cent., mucus 95 per cent., and perspiration 99 per cent. (Dr. Braun). A constant fluctuation takes place between the blood and the secretions, water being separated from the blood for the secretions and afterwards absorbed back again. Large quantities of water are also taken from the body by the lungs, skin, and kidneys, which necessitates a constant supply from without.

It is by some people believed that the more water they drink, the more they will perspire, but this idea is not altogether correct, for warmth of temperature is absolutely necessary for perspiration, without which people will not perspire, no matter how much water they drink. Drinking is merely the process by which the continued supply of material is kept up for the diaphoresis produced by heat and muscular exertion. Thus in warm climates, where perspiration is carried on very profusely, it is most necessary for people to have a plentiful and good supply of water, and the health resort that cannot supply this valuable commodity must not calculate upon having very large patronage. The value of water regularly applied to the skin cannot be overestimated, especially in warm climates, and until the people give up their superstitious dread of this commodity, they need not expect to have a healthy condition of body.

The main object of hygienic ablutions and baths is the purification of the skin, which is rendered necessary on account of the accumulations which result from shedding of the outer skin and the secretions on the surface. Frequent cleansing of the skin from this accumulation favours free perspiration, thereby relieving the perspiratory glands of the skin, which, if not allowed to discharge their contents freely, become diseased. Men of sedentary lives particularly should bathe often, because there

is less physical activity, and consequently less exhalation from the lungs, and, moreover, the glands of the skin are not relieved by the constant opening of the pores which takes place during perspiration in more vigorous people. Suppression of the function of the skin is not only liable to produce various diseased conditions in the skin itself, but also may bring about the most serious consequences in the lungs and kidneys by overtaxing their energies.

It is obvious, then, that too much attention cannot be paid to the proper ablution of the body. In bathing, as in most other things, there is a right way and a wrong way—a way by which much benefit may be gained by submersion, and a way by which more harm than good is done. The following points ought to be remembered. The temperature of the human body is  $98\cdot5^{\circ}$  F., and it does not require a great degree of cold to make itself felt on the surface of the body, although the water must reach as low as  $32^{\circ}$  F. to freeze the tissues, and  $26\cdot6^{\circ}$  F. to freeze the blood. The tissues lose their warmth almost as quickly as water, but the blood resists even strong and protracted refrigeration. We must not, therefore, in regulating the temperature of the bath be guided altogether by the feelings, for the water may appear cold to the skin, when in reality it might with advantage be considerably colder in some cases. About  $77^{\circ}$  F. is considered by most people to be a cold bath, but

some prefer it much colder, whilst others cannot take it even as cold as that. Very cold baths give first of all a sensation as if the blood were rushing to the head, the respiration becomes panting and very rapid, the skin gets sallow and hard, the pulse becomes contracted, small and hard, and the tissues rigid. In a few minutes these feelings disappear, after which the skin becomes warmer, until the surface of the body glows, the pulse gets full, large and regular, and a delicious sensation of strength and health pervades the frame. This goes on for about twenty minutes, when another chill comes on, and if the water be not left at this moment, loss of muscular power will suddenly take place, which may result in drowning. Very hot baths produce firstly a general and pleasant tremor, which is soon followed by a great and general heat and a frequent pulse. In about half an hour the respiration is greatly accelerated and impeded, the mouth becomes dry, violent thirst supervenes, the face becomes dark-red and puffed, the eyes prominent and injected, tears flow freely, and the head is heavy and giddy. Sleepiness, and sometimes fainting or apoplexy follow.

Hot-water baths for purposes of ablution cannot be too strongly condemned; and yet hot-air baths are, for many reasons, often highly beneficial, and it is astonishing what a great amount of heat the body will bear for a short time in the surrounding temperature. The reason of this is that water being a far

better conductor of heat than air, a warm-water bath is felt much more sensibly by the skin than air of the same degree of temperature. Vapour baths, although borne much better than hot-water baths, are for the same reason not borne so well as hot-air baths. They are commonly used for purposes of ablution, but more frequently they are employed medicinally, at a temperature of about  $110^{\circ}$ , especially in many scaly eruptions of the skin. Their action is to raise the temperature of the skin and thereby promote free perspiration. Hot-air baths differ from the vapour baths in that they do not interfere with the respiration, which is impeded in vapour baths owing to the moisture deposited in the bronchial tubes. No baths promote profuse perspiration so much as hot-air baths, and it is astonishing what a degree of heat the body will bear in the hottest room of the baths. The process consists in the patient sitting or lying naked in the tepidarium or first room, having a temperature of about  $115^{\circ}$  F., for about half an hour, when the perspiration beads from him in large drops; he then advances to the sudatorium or hot room, having a temperature of  $138^{\circ}$ , where he remains for another quarter of an hour, the perspiration now running freely down the skin. After this, some people go still further, into a very hot room, with a temperature of sometimes  $160^{\circ}$ , but this is quite unnecessary, and may be harmful, although it has been proved that man can stand a

temperature of 194° to 212° F., providing that the *air be dry* and that he have a plentiful supply of drinking water, so that evaporation be promoted to the utmost extent. The next step is to enter the shampooing-room, where an attendant kneads all the muscles of the body, and then washes the patient down with soap and water, pouring water over him at a temperature of about 85°. The next part of the process consists of a shower bath, at first warm, and gradually becoming as cold as can be comfortably borne, after which the patient plunges into a well of water, which is situated between the tepidarium and the frigidarium or cool room, from which he emerges into the latter room, where he dries himself, and reclines on a couch in his berth to sip coffee and, if he likes, smoke a cigar, and gradually become cool, when he dresses and departs considerably refreshed. There are numerous other kinds of baths, such as peat-baths, mud-baths, whey-baths, douche-baths, drop-baths, &c. in vogue chiefly at the various spas, which will be described further on.

Respecting the particular action of water when applied to the body externally, it was originally supposed that it was absorbed by the skin and carried into the blood, which view appeared to be corroborated from the fact that water was given off in perspiration. The fallacy of this exploded view will be at once apparent to all who will recollect tha'

water is but a combination of two gases, oxygen and hydrogen, in the proportion of one part of the former to two parts of the latter, holding in solution various salts, &c., and that the gases would undoubtedly be more quickly absorbed in their separate states than when combined in a liquid form.

Taken internally, water supplies the fluid for the formation of the digestive juices, being absorbed far more quickly in an empty than in a full stomach, and when its temperature is almost equal to that of the blood; and for this reason medicinal waters are commonly taken between meals and also warm, so as to avoid the necessity for the equalisation of temperature which must precede the absorption of cold water. All water except distilled water contains a variety of salts, such as carbonate and sulphate of lime, soda and magnesia, iron, &c., in different proportions, which often add considerably to the value; and many waters also contain organic products of decomposition, which render them unfit for use in proportion to the quantity of organic admixtures contained. Those waters which contain large quantities of salts are often taken with the greatest benefit by invalids, the particular salts having a beneficial influence on particular affections. Thus gout and rheumatism are relieved by a course of that water which contains much soda. Many mineral waters may be known by their peculiar colour, the whitish appearance of certain springs

being due to precipitates of carbonates of lime and magnesia, the bluish, milky or yellow appearance to the presence of sulphur, the reddish colour to iron, and the greenish hue to the deposit of sulphurets. It is only by a knowledge of the various constituents of particular waters and their chemical properties that we can understand their curative powers ; and thus it is very necessary that we should carefully consider the relative proportions of these constituents met with in the different spa waters, so as the more correctly to understand their actions upon the human body in its manifold phases of disease.

One of the most important and interesting constituents of mineral water is carbonic acid, by which many salts are rendered soluble and the water more palatable and agreeable to the taste, and without which chalybeate waters will lose their iron and become heavy and unpalatable. There are numerous places in our own country containing chalybeate springs, but the want of any carbonic acid renders them quite useless and unfit for curative purposes ; whereas those spas which contain plenty of carbonic acid holding iron in solution have a wide notoriety and are patronised by visitors from distant parts. There are three states in which carbonic acid is found in mineral waters, firstly in a fixed state, when it is firmly united with certain bases forming carbonates, from which it cannot be separated even by heat:



secondly, in a semi-fixed state in the form of sesqui- or bi-carbonates, from which a portion of the acid can be separated by heat or exposure to the atmosphere ; and, thirdly, in a perfectly free state, when it will escape at the ordinary temperature as soon as the water rises out of the ground and the pressure to which it was subject whilst underground is removed. The quantity of carbonic acid in different waters varies considerably, ordinary spring water containing very little indeed, and river water but little more, while sea-water has a considerably larger quantity than either ; none, however, containing any considerable amount when compared with the spa waters, where the quantity varies from 1 to 70 cubic inches in the pound, all such as contain 10 cubic inches or more being termed acidulous springs, and being generally found at the lower parts of mountain declivities or in the deepest valleys. The amount of carbonic acid found in mineral waters depends greatly on the hydrostatic pressure, one ounce of water at from 40° to 60° F. being able to absorb at the ordinary pressure of the atmosphere one grain of carbonic acid, and considerably more if the pressure be increased. So also the variations of atmospheric pressure have a considerable influence over the escape of carbonic acid from springs, less gas being liberated when the barometer rises and a great escape taking place when it falls, as, for instance, just before a storm, when the waters

become more agitated than usual and considerably more refreshing. The temperature of the water also has a marked influence on the amount of carbonic acid contained, more being absorbed by cold than by hot springs. The principal alkaline carbonates and bi-carbonates found in mineral waters are those of soda, potash, lithia, lime, magnesia, strontia, baryta, iron and manganese.

Next in importance to carbonic acid comes sulphuretted hydrogen, which imparts a very disagreeable taste and smell to the water, and which is caused by the decomposition of certain sulphurets by hot water, a temperature of  $111^{\circ}$  being sufficient to set it free from a solution of sulphuret of calcium. This valuable gas is found in the water of artesian wells, together with other gases, and is never firmly fixed but easily decomposed if it comes in contact with the atmosphere, when its hydrogen combines with the oxygen, causing a deposit of sulphur on the surface of the water, a portion of which deposit becomes oxidised, forming sulphurous and sulphuric acid. When organic matter is brought in contact with water containing sulphates, sulphuretted hydrogen is evolved, and this is the explanation of the fact that sulphurous springs are generally to be found in neighbourhoods of marshy ground, coal-beds, and bituminous rocks, where there are usually to be observed quantities of organic refuse. Water which

contains one cubic inch of sulphuretted hydrogen or 0.42 grains of sulphur in the pound is considered to be a strong sulphurous spring.

There is very seldom to be found a fresh-water spring that has not a trace of common salt, *i.e.* chloride of sodium ; and in northern Europe springs are found which contain so much salt as to be called brine springs. The enormous quantities that are kept in solution by sea-water is well known. In the Mediterranean and Adriatic seas the amount of common salt is supposed to vary from 171 grains in the pound, in the vicinity of Venice, to 280 grains in the pound near Messina ; the Atlantic ocean contains from 191 to 215 grains per pound ; the German ocean from 176 to 196 grains ; the Baltic Sea from 39 to 95 grains ; the Black Sea 107.6 grains ; the Sea of Azoff 74 grains ; and the Caspian Sea 27.6 grains.

It will be thus seen that the centre of the Mediterranean contains more salt than any of the other seas named, and this, together with the fact that it has hardly any tide, contains less free oxygen and more carbonic acid, and is much warmer than those parts of the Atlantic lying between the same latitudes, explains, to a great degree, the reason of the far greater mildness and equability of the climate on its shores. The chief cause of this great difference between the climates of the Mediterranean and those of the Atlantic is the existence of a submarine barrier of rock, extending from Cape Spartel to Cape

Trafalgar, in the Gibraltar Straits, which reduces the depth of this portion of the sea to 167 fathoms, and, according to Dr. Carpenter, shuts off the cold polar current, which descends along the Atlantic coast of Spain and Portugal (Dr. C. T. Williams).

Hydrochloric acid is found fixed in some waters and free in the Dead Sea water; and chloride of magnesium, potassium, and iron are frequently found in springs; as also are iodine and bromine, in various combinations, the latter never occurring without the former. Sulphates are not so common as chlorides, but are found in large quantities in the bitter waters of Bohemia, those usually met with being sulphate of soda, potash, lime, magnesia, iron, alumina, and strontia. Silica is contained in the water of all springs in various combinations, as are also minute quantities of phosphoric acid. Other saline matters are also found in mineral spas, but are not of much practical importance.

The temperatures of the different mineral springs vary considerably, some being just above freezing-point, such as the Styx in Arcadia, the Castalian spring at Delphi, and the Irkutsk spring in Siberia, and others being at boiling heat, such as the Geysers in Iceland, and the Urijino in Japan. Between these extremes there are waters of every degree of temperature, those between 32° and 65° F. being usually in our climate considered cold springs, those between 65° and 77° cool springs, those between 7°

and 88° tepid, those between 88° and 99° warm, and those between 99° and 212° hot. The varieties of climates, however, must be taken into consideration in estimating the temperature of springs, for a warm spring in one climate may be considered a cold one in a different climate. Thus a spring having a temperature of 34° will be called warm at Irkutsk and cold at most other places, and one of 40° will be considered warm at St. Petersburg, while one of 80° will be called cold at the equatorial regions. All springs are designated warm, or thermal, whose temperatures are higher than the mean annual temperature of the place in which they are situated, and cold if their temperatures are lower than that of the surrounding atmosphere.

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## CHAPTER III.

## MINERAL WATERS AND SPA LIFE.

MINERAL waters may be divided into the following—

*Alkaline Acidulous or Simple Alkaline Springs*, containing chiefly carbonic acid and bicarbonate of soda, have an agreeable taste if the quantity of carbonic acid is in excess of the amount of saline matters; but if the reverse is the case, they are very unpalatable. Taken internally, they act as stimulants to the stomach, increasing the appetite, and rendering the urine alkaline. They are used in gout and rheumatism, also in acid dyspepsia and uric acid gravel. Used as baths, they are said to render the urine less acid, but it is questionable whether these, or any other medicated waters, have any more effect externally applied to the body than that produced by ordinary water, except in so far as the skin becomes irritated according to the quantity of saline ingredients contained in the water. The following are

some of the spas belonging to this class—Vichy, Vals, Bilin, Soultz-matt, and Neuenahr.

*Alkaline Muriated Acidulous Springs* contain chiefly carbonic acid, chloride of sodium, and bicarbonate of soda. They are similar to the preceding, except that they contain in addition a quantity of common salt. Taken internally, they render the urine alkaline, and cause the bowels to act freely, besides promoting free perspiration, and are used in gout and dyspepsia, hysteria, and kidney and liver affections. They should not be taken too freely, or sleeplessness and dizziness may supervene. The following spas belong to this class—Ems, Royat, Selters, Vic-sur-Cère, La Bourboule, St. Nectaire, and Gleichenberg.

*Alkaline Saline Springs* contain chiefly bicarbonate and sulphate of soda, taste somewhat like weak mutton-broth, and produce, when taken internally first of all a feeling of headache and drowsiness, and often diarrhœa also; the stools become black, the appetite is stimulated, and perspiration is induced. They are useful in habitual constipation, liver congestions, gout, and dyspepsia. Skin eruptions are sometimes brought out by too free use of these waters. The following spas belong to this class:—Karlsbad, Marienbad, Franzensbad, Elster, and Tarasp.

*Bitter Water Springs* contain chiefly sulphates of soda and magnesia, and are purgative and diuretic

in their action, operating sharply on the bowels, and causing a good flow of urine and elimination of urea, but exciting great disturbance in the digestive organs when the sulphates are the only salines contained in the water. On this account, such bitter waters as contain other saline ingredients, such as common salt, in conjunction with the sulphates, are to be preferred. The best known spas belonging to this class are Püllna, Saidschütz, Seidlitz, Ofen (Hunyadi-Janos), Birmenstorf, Friedrichshall, Ashby-de-la-Zouch, and Epsom.

*Simple Muriated or Muriated Saline Springs* contain chiefly a small quantity of common salt, and have therefore some therapeutic value. They increase the appetite slightly, act moderately on the liver, and are mildly purgative. They have a reputation for benefiting cases of gout, rheumatism, scrofula, dyspepsia, constipation and liver congestion. The chief thermal spas of this class are Wiesbaden, Baden-Baden (which also contains lithium) Monte Catini, Nauheim, Cannstadt. The chief cold ones are Kissingen, Homburg, Cheltenham, Leamington, Kronthal, Niederbronn, Pyrmont, and Dürkheim.

*Iodo-Bromated Muriated Springs* contain iodide and bromide of sodium and magnesium, and are used principally in cases of scrofula. Taken internally, they increase the secretion of the saliva and the appetite, and stimulate the mucous mem-



branes generally. The spas belonging to this class are Krankenheil, Saxon, Challes, Heilbronn (Adelheid's Quelle), Münster-am-Stein, Kreuznach, Hall, Castrocaro, Wildegg, Elmen, Woodhall Spa, and others.

*Brine Springs* (such as Rehme) contain a large quantity of chloride of sodium, and are seldom taken internally, but as baths are extensively used. Thermal brine or sool-baths cause an increased excretion of urine and urea, but a decreased elimination of phosphate of lime. The loss of body-weight is not so great as after fresh water-baths. Taken for some time regularly, they prove nutritious, and increase the weight of the body, besides bracing up the nervous and muscular systems. These waters when used for bathing are said also to compose the mind, act on the bowels, increase the appetite, strengthen sexual desire, and expand the chest. Cold brine baths and especially sea-baths, are very beneficial. The sea-baths, owing to the low temperature of the water, the shock of the waves, and the sea-air, exert a very beneficial influence on the system, increasing the perspiration and excretion of urine, diminishing the elimination of chloride of sodium and phosphates, and increasing the weight of the body. Immediately after a sea-bath the patient feels brisker, and his appetite increases; the bowels soon act and the pulse is stronger and quicker than previously.

In diseases, where the outer skin of the body is either deficient in quantity or thickness, or covered with morbid deposits, or in a state of irritation from any cause, as in Psoriasis (lepra) and Eczema, sool-baths are contra-indicated, as, of course, are also ordinary sea-baths, whose effects are similar. Many natural sool-baths exist in various parts of Europe, and artificial ones may be very easily made by adding common salt and other chlorines to the water, in the proportion of about 2 or 3 per cent., or rather more. Another means of applying salt water to the skin is what is called *arenation*, a favourite mode of the Ischians, which consists in covering the body with the sand of the sea-shore, in the following manner:—A hollow, like a grave, is dug out of the sands, in which the patient lies, exposed to the sun's rays, and covered over, except his head, with a depth of about a foot of sand. This process stimulates the skin, causing free perspiration and excitement of the vessels and nerves of the surface of the body.

*Earthy springs* are usually thermal and contain carbonate and sulphate of lime, and chloride of calcium. They promote digestion, act on the kidneys, and, if taken in excess, cause diarrhœa and perspiration. They are also very valuable in cases of softening of the bones, rickets, and debility; and people who are constant visitors at these springs

are as a rule strong, healthy, and long-lived. The chief spas of this class are Wildungen, Leuk, Lipp-springe, Weissenburg, Bath, Lucca, Pisa, Bormio, Bagnères de Bigorres, and Contrexeville.

*Indifferent Thermal Springs* contain a very small amount of salines, but are nevertheless of great value as remedies in disease. Taken internally, the cooler ones act sedatively, while the warmer ones promote the action of the skin, and excite the cutaneous nerves. Used as baths, they produce a remarkable effect. First of all, a sensation is produced as though the skin were tightening, and afterwards the pulse and respiration become slower. Soon after this, the heat of the body and the muscular power are both increased. The chief spas of this class are Schlangenbad, Teplitz, Gastein, Wildbad, Pfeffers, Chaudefontaine, Landeck, Panticosa, Badenweiler, Römerbad, Plombières, Bains, Buxton, Dax, and Warmbrunn.

*Chalybeate Springs* contain chiefly carbonic acid and bicarbonate of protoxide of iron, and are tonic and stimulant in their effects, exciting the nervous, circulating, and digestive organs, and increasing the red corpuscles and fibrine of the blood. They are used chiefly in cases of debility and anæmia and general cachexia (bad habit of body). The iron of these waters, when taken internally, unites with sulphuretted hydrogen in the bowels, and forms

sulphuret of iron, which turns the stools green. If continued for too long a time, the digestion suffers, the appetite fails, the bowels become constipated, and general uneasiness prevails. The chief spas belonging to this class are Spa, Orezza, Schwalbach, Brückenau, Pyrmont, Königswart, St. Moritz, and Tunbridge Wells.

*Sulphurous Springs* contain sulphuretted hydrogen and sulphurets of metals, and differ according to their temperature and to the quantity of other salines contained in the water besides the sulphur, sulphuretted hydrogen, and sulphurets of sodium and potassium. Thermal sulphurous waters accelerate the circulation, and stimulate the nervous system, producing sometimes excitement and sleeplessness, and therefore should be cautiously taken. They are useful in gout, rheumatism, chronic skin diseases, such as eczema, prurigo, psoriasis (lepra), syphilis, also in neuralgia, scrofula, and glandular swellings. The following are some of the spas of this class—Aix-la-Chapelle, Aix-les-Bains, Baden (Switz.), Eaux-Chaudes, La Preste, Amélie, Eaux-Bonnes, S. Sauveur, Cauterets, Abano, Baden (Austria), Bürtscheid, Schinznach, Barèges, Luchon, Acqui, and Ax. The cold sulphurous springs are less stimulating than the thermal, and consequently safer, though not so active in their use. They are used in the same cases as the thermal, and also in

sluggish liver, obesity and constipation. The following are some of the spas of this class—Langenbrücken, Nenndorf, Weilbach, La Bassère, Challes, Schinznach, and Harrogate.

It will be observed that the mineral waters just enumerated have not all the same therapeutic action and are not all suitable alike to the same class of complaints, and therefore in selecting a spa the greatest care should be taken that the one chosen should be in every particular suitable, or serious inconvenience, annoyance, and even mischief may be incurred.

In choosing a spa, every symptom should be carefully considered, as well as the particular constitution of the individual, and, as a rule, the advice of a physician should be sought before finally deciding. The following points will be of some help:—

*Dyspepsia* requires, when of an atonic character, waters containing common salt and carbonic acid, cold chalybeate or sulphur springs, or some one of the acidulous waters. To derive benefit, however, from these waters, it is essentially necessary to combine their use with proper medicinal and dietetic remedies, and here I may mention that for all atonic forms of indigestion ginger is an excellent aromatic stimulant and tonic, dispelling flatulence and considerably aiding the digestive functions; but in order to obtain the greatest advantage from its use care

should be taken to procure an essence of ginger that has had eliminated from it the resinous portion of the root, which is as disagreeable and sickly to the taste, and as useless, as the volatile and aromatic portion is agreeable and useful. Owing to the hitherto almost exclusive use of the pharmacopœial essence of ginger which abounds with the resin naturally existing in the root, ginger and its preparations have not received that amount of high appreciation by the profession and the public that they have deserved. The long required desideratum, however, has recently been supplied, and a pure non-resinous essence of ginger is now to be obtained from Mr. Hay, chemist, of Hull, who has prepared an essence of Jamaica ginger containing the whole of the aromatic portion of the root, but uncontaminated by any of its resinous portion. This essence, besides having an unusually fine aroma and flavour, is a very elegant preparation, making a beautifully transparent mixture with water, and in other ways having a great advantage over the official and all other essences of ginger. It may be taken with great benefit in all cases of impaired digestion arising from weakness of the digestive organs. It is also well adapted for the manufacture of ginger beer and other wholesome non-intoxicating beverages; and the ginger champagne prepared from this essence is one of the triumphs of the age, being one of the most delicate and wholesome non-alco-

holic beverages in the market, and of great service in cases of atonic dyspepsia with flatulence. Another very valuable preparation which may be used with the greatest advantage during a course of these mineral waters is the Kepler Extract of Malt, which, taken during meals, assists in disposing of the food, besides supplying the body with a large amount of nutriment. Wyeth's Compressed Peptonic Tablets, also, are most useful preparations, containing pepsin, pancreatine, lacto-phosphate of lime, and lactic acid, and if taken immediately after eating, will wonderfully assist the digestive functions. There is a great advantage in these tablets over ordinary lozenges, in that they consist of the pure drugs only, and are not diluted with sugar, gum, or paste, which so often offend the stomach; and are moreover compressed into such small tablets that they can be easily and comfortably taken by the most fastidious. In those cases where there is an excess of acid in the stomach, the alkaline springs or waters containing iron combined with soda are useful, and in such cases Wyeth's Compressed Soda-Mint Tablets may be advantageously used. Also if there be severe pain about an hour after eating, or obstinate vomiting, it will be found very advantageous to use Syme's Lac Bismuthi, which is a very valuable preparation of bismuth, or Mackey's Mistura Bismuthi Comp., another very valuable preparation, containing besides the bismuth, other useful ingredients, which

render it far more effective than if taken alone, and particularly suitable where there is much pain in the pit of the stomach. In cases of indigestion due to nervousness, the thermal brine, indifferent, alkaline or thermal sulphur waters are of most service, and in these cases again the use of Mackey's Mistura Bismuthi Comp. will be found of great service; and if there should be troublesome and persistent headache in addition, I know of no remedy so prompt and efficacious as Bishop's Citrate of Caffeine. All kinds of dyspepsia are much benefited by change of air, scene, and surroundings; and therefore, in choosing a spa for this complaint, distance should be no object, for, the farther away from home is the chosen spot, the greater will be the complete change and the chances of cure.

*Costiveness* requires bitter-waters and brine-waters containing sulphur. There are imported into this country a great number of the Hungarian and other bitter-waters, all claiming excellence over each other on account of their greater efficacy. Any of these may be used with advantage in cases of habitual costiveness.

*Diarrhœa*, when chronic and persistent, requires alkaline or saline waters, and also cold chalybeates and earthy springs. This dangerous and troublesome complaint should not be allowed to continue without seeking the advice of a physician, by whom the diet should be regulated.



*Piles* require sulphur and chalybeate waters, to which treatment may be advantageously added the use of Pond's Extract, as an external application or injection each night and morning. This useful extract is an excellent styptic (arrester of bleeding), and may be confidently used in all hæmorrhages (bleedings), whether the result of disease or injury.

*Worms* disappear under the continued use of waters containing sulphuretted hydrogen. Brine injections are also very valuable.

*Liver Congestions* are best relieved by a course of purgative and saline, alkaline saline, or sulphur waters. The bath-life exercises a most salutary influence in these cases.

*Tendency to Apoplexy*, or full habit of body, requires strong salt waters, but not those containing much carbonic acid. The cold water cure, dry rubbing, and brine baths are also very beneficial.

*Bright's Disease of the Kidneys* is improved by free internal administration of the milder acidulated alkaline waters, with warm baths, and when at an advanced age the chalybeates should be taken. Attention should also be paid to the diet, and a warm winter climate should be secured.

*Gravel*, if lithic (red), should be treated by alkaline,

alkalo-saline, or alkalo-muriated waters, and if phosphatic (white), by earthy waters.

*Diabetes* requires alkaline waters internally, and hot and vapour baths externally. Great attention should be paid to the diet, which should consist chiefly of animal food and gluten or bran bread, and a dry warm winter climate should be secured.

*Diseases of the Breathing Apparatus* are improved, as a rule, by the use of chalybeates, but a good deal depends on the exact stage of the disease. These diseases depend more upon the climate than upon any peculiar virtue in the water. Chronic bronchitis, moist asthma, and the early stage of phthisis, are benefited by a warm dry climate; and spasmodic asthma, irritability of the mucous membrane of the lungs, hard dry cough, and irritative phthisis by a warm moist climate. In all lung cases it is very necessary, and often very difficult, to keep up the patient's strength by artificial means, such as cod-liver oil, which can now be obtained in an almost tasteless form. The best preparation I have met with is Mackey's Emulsion of Cod-liver Oil (*mistura olei morrhuae*), which is not only quite free from the flavour of the oil, but is really a pleasant medicine to take. The Kepler Malt Extract is another useful remedy in cases of debility from phthisis, and can be taken either alone, or combined with cod-liver oil, in both of which forms it can be obtained. Th

value of cod-liver oil in such cases need not be dilated on, but the public generally are, perhaps, not so familiar with the preparations of malt, which may be described as containing malt, sugar, dextrine, diastase, phosphates, and albuminoids, and as being most nutritious and strengthening. Another very valuable preparation in all debilitating diseases is Burrough's Beef and Iron Wine, which can also be obtained combined with quinine. In affections of the larynx it is sometimes necessary to use inhalations, in which case the Burrough's Inhaler will be found easily portable, and thoroughly adapted for the purpose. That most distressing symptom, hoarseness, may be quickly relieved by the use of Mackey's Compound Lubricating Throat Lozenge, which I have myself used and prescribed largely, and can highly recommend.

*Hæmoptysis* (bleeding from the lungs), a not uncommon accompaniment of lung disease, is checked promptly by the use of Pond's Extract, taken internally, in teaspoonful doses of twenty minutes.

*Scrofula* (struma), when deposits have taken place, is improved by a course of salt baths externally, and iodine waters internally; when the bones are diseased, by sulphur waters; and, when there is great debility, by sea air and sea bathing. In no disease is the value of sea air so evident as in this. Burrough's Beef and Iron Wine, and Mackey's Emulsion

of Cod-liver Oil, are most useful in this condition of body, as are also the Kepler Malt Extract and Fellow's Syrup of the Hypophosphites.

*Anæmia* (impoverished or insufficient blood), and *Chlorosis* require chalybeates with plenty of carbonic acid, or salt and carbonic-acid waters, both internally and externally. Sea-bathing, travelling, and thorough change are all excellent remedies for these complaints. Wyeth's Dialysed Iron may be used with the greatest advantage in these complaints, and is a remarkably convenient preparation, being easily administered by means of a dropper, quite tasteless, and uninjurious to both the teeth and stomach. The Burrough's Beef and Iron Wine is also very useful in these complaints.

*Leucorrhœa* (whites) is benefited by chalybeates containing plenty of carbonic acid, but sufferers from this most distressing complaint should, at the same time, use Pond's Extract night and morning as a vaginal injection diluted with two parts of warm water. This valuable preparation has a remarkable effect in such cases, checking, and often quite stopping, the discharge and strengthening the parts. Wyeth's Dialysed Iron should be taken internally, and sea baths regularly used.

*Rachitis* (rickets), requires earthy springs containing much lime. Fellow's Syrup of the Hypophosphites is here very valuable.

*Spinal Affections* and *Paralysis* require indifferent springs, and those containing salt and carbonic acid. The cold-water treatment is also of great value.

*Neuralgia*, when accompanied by anæmia, is benefited by chalybeates and thermal indifferent waters, hot salt baths, and sulphur baths. Burrough's Beef and Iron Wine with Quinine is here very useful.

*Hysteria* and *Chorea* (St. Vitus's Dance) require chalybeates and saline chalybeates internally, and warm baths. The mild hydropathic treatment is also of great service. Wyeth's Dialysed Iron is, in these cases, highly useful, and Burrough's Beef and Iron Wine may also be used with advantage.

*Rheumatism* is benefited by the internal use of thermal indifferent, alkaline, or sulphur waters, and by mud baths. Lime-juice is an excellent drink in such cases, often giving wonderful relief.

*Gout* requires alkaline, saline alkaline, and lithia waters, and vapour baths. Those sufferers from rheumatic and gouty affections, who are not able to leave home, and who therefore cannot enjoy the advantages of the various baths and waters, may find a very good substitute in Sampson's (Sutton-in-Ashfield) Aërated Soda, Potash, Lithia, and Seltzer waters, which are quite free from all contaminations, exceedingly pure, and contain a large quantity of

carbonic acid. They are, as testified by the *Lancet*, prepared with scrupulous care, and of great purity.

*Skin Diseases* must be treated according to the character of the eruption. Such scaly eruptions as psoriasis and squamous eczema require hot and prolonged baths, mud baths, and poultices, and arsenical waters internally. Mackey's Coal Tar Soap should also be used. In most skin affections, especially where there are deposits on the surface, as in eczema and psoriasis, salt must be avoided externally, and indifferent, earthy, and sulphur baths should be used. Internally, as a rule, chalybeates, sulphur, iodine, and arsenical waters are of most benefit. In all parasitic skin affections, and in those where there are a number of very minute scales scattered over the body, appearing like bran, Yardley's Carbolic Acid and Coal Tar Soap should be used, which is an excellent toilet soap and highly efficacious as a disinfectant and parasiticide. Mackey's *Saxcere Alba* is also very useful in roughness of the outer skin, and chapped hands and lips.

So much for the various kinds of mineral waters and the diseases that are benefited by them. A word now about the spa customs. At most spas it is usual to retire to rest early, and rise in good time in the morning, and this is especially necessary if there are a great number of visitors, for late risers at such places have frequently to wait several hours

before they can have a bath, which breaks into the day, and causes much inconvenience. The waters are generally taken between the hours of half-past 6 and half-past 8 in the morning, and the quantity varies from three or four to eight or nine ounces. Many people drink them slightly warmed, and others mixed with milk or whey, whilst a few take them through glass tubes, in order to protect their teeth. The whey is prepared by adding acetic acid or rennet (one drop) to milk (one gallon).

The arrangements for taking the waters vary at different spas, some wells being quite open and surrounded by railings, others being covered in, and others, again, so deep in the earth that it requires a and bucket rope to bring up the water. At almost all, however, an inspector has official charge of the well, from whom bath tickets must be taken.

After drinking the waters the patients promenade up and down the shaded avenues or covered footways, chatting with each other, and repeating the draughts at intervals of about twenty minutes, or half an hour, after which they take a light breakfast. It is usual to take a little coffee or chocolate before commencing to drink the waters, and it will be well to remember that in France tea is very rarely drunk, so that it is as well to give up entirely that home comfort for the time, and take to the coffee and chocolate so excellently served up abroad. Moreover, the change from tea to coffee or chocolate

will be a decided advantage to the invalid, giving his nervous system a chance to recover itself, which may lead to a more comfortable existence in the future. It would be well for their health were most visitors to Continental spas to contract the habit of drinking cocoa or chocolate, and keep it up on their return home. With such a delicious beverage as that made from Fry's Caracas Cocoa and Fry's Chocolate (Bristol), to take to as a substitute, it is strange that people still indulge in tea, and suffer for it. It should be mentioned that Messrs. Fry have recently produced a combination of their chocolate with Messrs. Allen and Hanbury's Malt Extract, which makes a most wholesome and delicious beverage.

Baths are generally taken after the waters have been drunk, and, as a rule, after breakfast. In France the first meal of the day consists of a *d'jeuner à la fourchette* at about 10 o'clock, and is followed by a dinner of several courses about 5 or 6 in the afternoon. In Germany a light breakfast is taken at about 8 or 9 in the morning, dinner at 1 o'clock, and light tea, or second dinner, at about 5 or 6 in the afternoon. Whether in France or Germany, as a rule, people at the spas dine at *table d'hôte* in the establishments in preference to dining at their apartments. Most of the Continental spas are particularly agreeable places, having plenty of amusements and delightful and varied society. The



amusements consist of bands of music morning and evening, balls, concerts, theatres, and other entertainments. Reading-rooms and libraries are open daily. The expenses are heavy at some spas, and light at others, and this depends altogether upon the celebrity of the place, which is not always due to the excellence of the water, but too often to the fact of its being a fashionable lounge; and therefore it behoves one not to be hasty in deciding upon a very fashionable spa, but to look carefully round and find out the one which excels in the therapeutic value of its water, without regard to the number of visitors; in many cases the smaller spas are quite equal in value to the larger ones, and certainly more benefit and comfort will be secured to the quieter class of people by visiting these rather than those which attract the fashionable people.

Then, again, the sanitary condition of the different spas must be taken into very careful consideration, and it should be borne in mind that the farther one goes away from England, the more neglected are the sanitary arrangements, and as a rule dirt, laziness, and indifference to everything except superstitious offices of the churches increase as we travel eastwards. No wise traveller will venture for any length of time on the continent without a good supply of disinfectants, and no disinfectant is so efficacious and handy as Calvert's Safety Carbolic Tablets (Manchester), which should be used regu-

larly for purifying water-closets and sick-rooms. I have stayed at first-class hotels both in France and Germany, where the sanitary arrangements were most faulty, and I believe that most continental hotels, especially those of Italy and Spain, are equally neglected. In addition to this, Calvert's tablets are about the best of all preventives against vermin that I know of; and when it is remembered that in all hot climates these pests are continually plaguing one, it will be at once apparent that travellers in the south of Europe and other warm countries should never be without these tablets. Mark Twain's description of the filth, poverty and misery of most of the charming and celebrated Italian and other southern health-resorts is only too true.

At all the spas, baths of every description may be procured by paying for bath-tickets, several of which should, if possible, be taken at once in order to avoid the greater expense of single tickets. There are single and common baths, the former consisting of private baths in small cabinets by the side of the corridor, which are far preferable to the common ones, which are large and public, where numbers of people bathe together, each wearing a thin garment like a shirt. Spa physicians reside at all establishments, and are always ready to tender their advice and services gratuitously, which, it is almost needless to add, should be implicitly observed, for it is not always safe to stop long in some baths.

Some people may remain several hours in the bath, whilst others can only stand ten minutes. If a long stay be made at a bathing establishment, it is customary to give a small fee towards the support of the band of music, which adds so much to the pleasure and comfort of the spa, but this is not obligatory. It is also customary when leaving a bath to present the physician with a small token in return for his good offices, which are often much sought after; but this, again, is not obligatory, and rests with the good taste and gratitude of the patient.

At many spas there are a number of establishments for hydropathic treatment, by which heat is abstracted from the body, which is at the same time stimulated by cold water applications. These baths may be taken in different manners and degrees, that is, they may be taken as full baths or partial baths, or as protracted or rapid baths. In a full bath the patient lies quietly on his back, covered with wet sheets, until he feels very cool, when he is rubbed, without the sheets being removed, until he feels comfortably warm. Sometimes the sheets are removed as they become warmed by the heat of the body and fresh ones are applied, the body being afterwards well rubbed, and a shower bath finally taken. Partial baths are applied only to particular parts of the body. The duration and temperature of the bath depends on the patient's powers, and the

discretion of the medical attendant. The effects of this kind of treatment are promptly manifested, and consist in a general cooling of the body, with contraction of the capillary blood vessels, followed by a universal glow and excitement of the vascular and nervous systems, causing rapid absorption and excretion. The cold-water cure has a reputation for being very beneficial in cases of hysteria and other functional disturbances of the nervous system, in melancholia, rheumatism, and gout, but people of a weakly state of body, suffering from anæmic and other debilitating diseases should avoid hydro-pathy.

There are various other modes of applying water to the body, such as drop-baths, in which a single drop of water falls, from a height of twenty or thirty feet, on the part affected every few seconds, causing a great shock, which can only be borne for a few minutes at a time; douche-baths, in which a jet of hot or cold water is allowed to play upon the affected part; shower-baths; and peat-baths or moor-baths, which are prepared by means of saturating the moor-earth, day after day for years, with simple or mineral water, and then mixing the prepared peat with warm water, until it has a specific weight of about 1.2. The Franzensbad, Marienbad and Teplitz moor-baths are well known. Mud-baths are also very commonly met with at spas, notably at St. Amand-les-Eaux, and are prepared

with the deposit at the springs. Pine-leaf baths are sometimes met with, but have not gained much popularity. Whey-baths, although a luxury of the rich only, are very commonly employed in cases of irritable skins, neuralgia, &c., as also are milk-baths. Whey is the serum of milk, consisting of sugar of milk and salts, left behind after the separation of the casein and butter, and is as a rule prepared with the pepsine of rennet. The salts held in solution in whey are chlorides of potassium and sodium, and phosphates of potash and soda; the phosphates of lime, magnesia, and protoxide of iron combining with the casein and becoming deposited as sediments. At most of the whey establishments, goat's milk is used in the preparation, but cow's and sheep's milk are equally good for the purpose, the only difference being that sheep's milk contains rather more albumen and rather less water, and that cow's milk contains rather less fat and salts than the other two. The value of whey drunk in large quantities as a cure in bronchial and laryngeal affections, chronic dyspepsia, and congestion of the liver, has been much lauded, but probably its good effects in these diseases have been exaggerated. Another preparation of milk, useful in cases of obstinate sickness and indigestion, is made by placing ordinary milk in a small quantity in a large open stone-ware pan, first mixed with a small quantity of powdered lump sugar, when fermentation rapidly takes place, and

the milk becomes sour. In twenty-four hours the fermented milk must be put into champagne bottles and well corked down, the cork being fixed with wire or string. On the following day it may be drawn off for use, when it will effervesce freely like champagne. This makes a very refreshing beverage. Koumiss is another preparation of milk already mentioned, which is chiefly prepared by the nomadic tribes of eastern and southern Russia, inhabiting the Kirghis steppes, and consists of fermented mare's milk, holding in solution a large amount of lactic acid, carbonic acid, and alcohol, which make it a refreshing drink. It is supposed to be of service in cases of consumption, its effects being principally a tendency to the deposit of fat and a feeling of bodily comfort. There is now an establishment at Wiesbaden, where the genuine Koumiss cure is applied.

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## CHAPTER IV.

## BRITISH HEALTH RESORTS AND SPAS.

Owing to their insular situation, the climate of the British islands is far more equable than that of many continental places situated much further south, and in addition to this they have the advantage of the influence of the gulf stream, which runs across from the gulf of Mexico and strikes on the south and west coasts, bringing with it a noticeable warmth. The effect of these conditions is a remarkably equable climate, tolerably cool in summer and warm in winter, the equability being more noticeable on the south and west coasts than on the east. A glance at the isothermal lines of the British islands will at once explain my meaning. These lines run through various localities of the same temperature, and will be found to vary in different months. Thus the British isotherms of January run in a

direction from north to south, whilst those of August run in a contrary direction from east to west. Commencing at Land's End, the August isotherm of  $62^{\circ}$  F. embraces all that district between the coast-line of the English Channel on the south, and a line running from Penzance through Bath, Buckingham, Ely, and Lowestoft, on the north; the next August isotherm of  $61^{\circ}$  runs from Milford Haven through Birmingham to Boston; the next,  $60^{\circ}$ , runs from Limerick, through Dublin and Blackpool, to Bridlington; that of  $58^{\circ}$  runs from the north coast of Ireland, through the Isle of Arran to Berwick-on-Tweed; and that of  $56^{\circ}$  through the Isle of Skye, and the county of Ross to Tarbatness. The January isotherms run in the following manner—that of  $48^{\circ}$  from Tralee through Cork, Youghal, Launceston, and Dartmouth to the island of Jersey; that of  $40^{\circ}$  from Londonderry, through Enniskillen, Roscommon, Thurles, Maryborough, east of Mullingar, Armagh, Lurgan, Strangford, Llandudno, Shrewsbury, Worcester, Gloucester, and Salisbury, to Portsmouth; that of  $39^{\circ}$  from Lerwick, through Kirkwall, Strathy, Greenstone Point, Point of Aird, Island of Coll, Crinan Canal, Ayr, Dumfries, Wigton, Kendal, Clitheroe, Manchester, Stafford, Oxford, Reading, and Horsham, to Eastbourne; and that of  $38^{\circ}$  from Inverness, through the Caledonian canal to Fort William, thence through Loch Katrine, east of Glasgow, Lanark, Hexham, Darlington, Yor-



Retford, Oakham, and Bedford, to Chelmsford. Thus it will be observed that in the summer months the warmest parts are along the southern counties, and that the more north we go the cooler it becomes; also that in the winter months the warmest parts are in the south-western corners of England and Ireland, and that the more we proceed in a north-easterly direction, the cooler it becomes. The water of the sea at Devonshire and Cornwall has seldom as low a temperature as  $46^{\circ}$  F. in midwinter, and in the Scilly Isles frost rarely appears oftener than once in three years, the mean winter temperature of the islands generally being as high as  $51^{\circ}$  F. In the month of August, on the contrary, these localities are remarkably cool, the greatest heat being found along the east coast, especially Kent, and the eastern counties, on account of their propinquity to the continent, from whence the hot winds pass over without encountering much equalising influence from the sea. The greatest extremes of climate are to be found in the eastern and midland counties. Along the south coast, all the well known health stations are well protected from the north and east winds, and the rainfall varies from 23 to 44 inches, the number of rainy days varying from 132 to 178, and the range of temperature from 27 to 33. The prevailing winds are westerly. After these general considerations of our climate, our attention must be turned to a consideration of the particular features

of the best known and most celebrated of our health resorts and spas in alphabetical order.

**ASHBY-DE-LA-ZOUCH** is a small village in Leicestershire, possessing tolerably strong salt baths, but very poorly appreciated by our countrymen. The waters are said to be useful in rheumatism and scrofula.

**ASKERN**, six miles from Doncaster, is a quiet little village almost unknown, but possessing mineral waters very similar to those of Harrogate, though having a less purgative and stronger diuretic action. **Mr. F. T. Hindle**, the resident surgeon, informs me that these waters are very beneficial in skin diseases, chronic rheumatism, and dyspepsia.

**BARMOUTH** is a pretty and well sheltered watering place at the mouth of the Aber on the Merionethshire coast, having a delightfully equable though rather moist climate, suitable as a winter residence for cases of spasmodic asthma and irritable mucous membrane of the lung.

**BASLOW** is a charming village near Chatsworth in Derbyshire, about ten miles from Sheffield, and within easy driving distance of Buxton, Bakewell, Matlock, and Chesterfield. It is principally celebrated on account of its splendid new hydropathic establishment, and its propinquity to the charming palatial residence of the Duke of Devonshire at Chatsworth. It seems strange that a place so situated and in the

midst of such charming scenery should have hitherto been utterly neglected as a winter health station, when we consider that it is well-sheltered on the north, north-east, and north-west, has a remarkably mild winter climate, and was formerly celebrated for its mineral springs, now, however, neglected and forgotten. The elevation is high in comparison to many of its better known rivals.

BATH, once the most fashionable spa in England, is now sadly neglected, in spite of the fact that its waters are as efficacious as before. It lies at an elevation of 100 feet above the sea-level, and the temperature of its springs, which are indifferent thermals, with a small quantity of gypsum and carbonate of lime, varies from 104° to 120° F. The climate is remarkably equable, though rather relaxing in the summer months, on which account visitors usually remain there from November until April, though the baths are open all the year round. The waters are not much drunk, being used with excellent results as baths in gout, rheumatism, thickening of the joint, paralysis, and dry scaly eruptions of the skin.

BEULAH SPA, near Sydenham and Norwood, is a bitter-water spring, containing a large quantity of sulphate of magnesia and chloride of sodium, and a little sulphate of soda and carbonic acid. It is used as an aperient.

BONCHURCH—*vide* Ventnor.

BOURNEMOUTH is situated in the valley made by the mouth of the Bourne, on the Hampshire coast, and is well protected on the north, north-east and north-west by fir-clad hills, which fill the air with fragrance. It has a great depth of sandy soil, which rapidly absorbs the rain, so that invalids may take a walk almost immediately after a heavy storm. The annual mean temperature is 45° F. and the annual rain-fall about 28 inches. During the season, from October to March, the mean temperature is 42·38° F., the diurnal range about 18° and the rainfall 17 inches. As a winter health station for consumptives, Bournemouth has a very wide reputation, being less bracing than Hastings and more so than Torquay. Dr. Horace Dobell has lately opened the Mont Dore establishment here.

BRIDGE OF ALLAN, near Stirling, is a sheltered muriated saline spring, which, unfortunately, contains a sufficient quantity of sulphate of lime to interfere with the action of the salt. It is, nevertheless, a favourite spa for people suffering from indigestion. The waters, which are slightly aperient, are taken warm before breakfast.

BRIDLINGTON QUAY, which lies in the beautiful bay on the south side of Flamborough Head, is a well-known sea-side resort for scrofulous people, besides possessing a mild chalybeate spring. St. Ann

home here is supported by voluntary aid for the benefit of strumous and debilitated people. The season is August and September.

BRIGHTON, the sea-side London, is a most attractive and charming resort on the Sussex coast, having a bracing climate, well adapted to strumous complaints in summer and autumn, but, owing to its exposed situation, quite unfit for consumptives, or for those requiring a mild winter climate. Autumn is the season.

BUXTON is a prettily situated town in Derbyshire, surrounded by limestone hills, and having an elevation of 1,000 feet above the sea-level. Its climate during the season from April to November is bracing, but in the winter it is far too bleak to induce visitors to remain there. The temperature of the waters, which are of the indifferent class, is 81° F., and they are most useful in cases of chronic rheumatism, gout, and stiff joints. The average duration of a bath is ten minutes.

CHELTENHAM, a beautiful town in the west of England, the streets of which are planted with trees like a continental city, used to be favoured with about 14,000 visitors annually, but lately has been almost entirely neglected. It has a mild and equable climate, although rather relaxing in summer, and possesses three different kinds of mineral waters—a strong saline and bitter-water spring, a sulphur saline

spring, and a chalybeate spring. The waters are chiefly drunk, and are useful in cases of anæmia and chlorosis, and also in dyspepsia and chronic liver disease caused by living for some time in India. The chief drawback to the place is the want of a sufficient quantity of carbonic acid and carbonate of soda in the waters.

CHERRY ROCK SPA, near Kingswood in Gloucestershire, contains a bitter-water spring, which is useful as a purgative.

CLIFTON, near Bristol, is better protected from east winds than any other place in England, and is built on terraces on the southern slope of a hard limestone and sandstone hill, the soil on which rapidly dries after rain. The winter temperature is 8° cooler than at Torquay, but the atmosphere is not so humid, and therefore very suitable to some forms of consumption. There is also a thermal indifferent spring, with a temperature of 74° F.

COVE (now Queenstown), in county Cork, is a remarkably pretty spot, built on terraces, and having a climate similar to that of Penzance, with the additional advantage of being well protected from winds.

DAWLISH has a somewhat similar climate to Torquay, but is not so sheltered as that place from east winds.

DROITWICH, near Worcester, is one of the best of the English muriated springs, and is almost certain to be much sought after before long. The water is very rich in common salt, and all that is wanted is facility for utilising it. Were this spa to become popular and suitable, and were convenient baths erected, the annual exodus from this country to Kreuznach of those afflicted with scrofula and strumous swellings would soon cease.

EASTBOURNE, on the east side of Beachy Head, is a very charming and healthy watering-place, built on a porous sub-soil, exceedingly well drained, and enjoying a mild and bracing climate, the mean annual temperature being  $50^{\circ} \cdot 7$  F. The rainfall is small, and the air very dry, which makes it a valuable health resort for such as are not affected by the east winds, to which, unfortunately, the town is somewhat exposed.

EPSOM SPA is a bitter-water spring, containing 240 grains of sulphate of magnesia (Epsom salts) to the pint. Very useful in obstinate constipation.

GILSLAND SPA, situated near the borders of England and Scotland, between Carlisle and Newcastle-on-Tyne, possesses an iron spring and a sulphur spring. The ailments most benefited by a sojourn here are dyspepsia, chronic rheumatism, and skin affections.

**GRANGE**, a charming spot on Morecambe Bay, has a very mild winter and spring climate, being well protected by hills from north and east winds. It is very suitable for people with delicate chests in the spring of the year.

**GUERNSEY**, one of the Channel Islands, has a very mild, though rather humid, winter climate, but is exposed to north and east winds.

**HARROGATE**, in Yorkshire, is the most celebrated mineral spa in England, and justly so, having sulphur springs, salt springs, and pure chalybeates. It is situated about 400 feet above sea-level in a rather uninteresting country, is very bracing, and has excellent bathing establishments. The old (pump-room) sulphur well contains in 128 grains of salts 12 of lime and  $\cdot 8$  of sulphur, while the mild (pump room) sulphur well contains in 96 grains of salts 5.5 of lime and  $\cdot 18$  of sulphur. These waters are stimulants, increase the secretions of the alimentary canal, act on the liver, cause absorption of gouty and rheumatic swellings, and of fatty matters in cases of obesity, and are also aperient. They should not be taken for longer than three weeks at one time, or they may produce loss of appetite, thirst, giddiness, headache, and fever. The dose is half a pint three times before breakfast at intervals of fifteen minutes. Used as baths, they have a very good effect in cutaneous eruptions. The pri



principal salt springs are the Kissingen and Montpelier sources, both containing, besides sulphur, small quantities of carbonate of iron, the former  $\cdot 37$  and the latter  $\cdot 27$  to the pint. The pure chalybeate springs are the Tewitt, with  $\cdot 13$  of iron salts, and some other inferior ones. The season is from May to September, though many people remain there till October, or even later, in spite of the bleakness of the place at such times. The Victoria baths are magnificent of their kind, but, unlike the continental spas, are quite devoid of the many comforts and luxuries met with abroad.

HARTFELL, near Moffatt, in Scotland, has a spring containing sulphate of iron, which is of great repute in the districts around.

HASTINGS (with St. Leonards), the most celebrated of British winter health resorts, having had better results in the cure of phthisis than any other in the country. The appetite is usually far better here than at the more western stations, and cod-liver oil is, as a rule, better taken (Dr. C. T. Williams). The town is well sheltered from the north and north-east by a high cliff, although slightly exposed now and then to the east winds, is more bracing than the more westerly stations, tolerably free from fogs, and built on a sand foundation. The mean temperature is  $39^{\circ}$ , the range  $38^{\circ}$ , the winter rainfall about 7 inches, and the

annual number of rainy days 152. There is a fairly good chalybeate spring here which is much used and well spoken of, though rather deficient in carbonic acid.

ILKELEY, in the West Riding of Yorkshire, is celebrated for its healthy situation and its hydro-pathic establishments, the chief of which are Ben Rhydding, Troutbeck, Craiglunds, Marlborough House, Wells House, and The Grove.

JERSEY, one of the Channel Islands, has a very mild winter climate, though rather humid, but is too exposed to the north and east to be much sought after by consumptives.

LEAMINGTON possesses several valuable springs. The principal saline spring contains per pint 40 grains of sulphate of soda, 40 of common salt, 20 of chloride of calcium, 3 of chloride of magnesium, traces of iron, bromine, and iodine, and two cubic inches of carbonic acid. The saline chalybeate spring contains 32 grains of sulphate of soda, 60 of common salt, 20 of chloride of calcium, 12 of chloride of magnesium, 1 of iron, and 3 cubic inches of carbonic acid. There are also other sulphuretted springs. The season is from May to October. In spite of the evident and valuable properties of these waters the place is now almost deserted!

LYTHAM, in Lancashire, is situated opposite Southport at the mouth of the Ribble, and faces directly

to the south. It possesses a very equable and dry climate, and is used as a winter health resort by delicate people in the north.

MALLOW possesses an indifferent thermal spring which is the hottest in Ireland, having a temperature of 69° F. The town is beautifully situated on the north bank of the Blackwater, twenty-one miles from Cork, and has a very mild, though humid, winter climate. It is quite neglected!

MALVERN is celebrated for its healthy situation and its hydropathic establishments. There is also a mild chalybeate here. Malvern Wells, two miles south of Great Malvern, is said to possess in the Holy Well water of remarkable purity, being quite devoid of any chemical property.

MARGATE is the most celebrated of all seaside resorts for strumous people during the summer months, and possesses a very fine sea-bathing hospital situated at Westbrook, just outside the town. The air is peculiarly invigorating.

MATLOCK, one of the loveliest and healthiest towns in Derbyshire, is celebrated for its mild winter climate, its hydropathic establishments, whose name is legion, and its mineral waters, of a temperature of 68°, something analogous in chemical constitution to those of Buxton. Matlock Bath is situated in a deep ravine, amidst magnificent scenery, and is quite sheltered from all strong winds, which makes

it a very valuable winter health resort for people with delicate chests. In summer it is too close for residence in the town. Matlock Bridge is much more open, and it is here that the hydropathic institutions are located.

MELKSHAM, near Trowbridge, possesses a valuable salt spring, which is not appreciated as it deserves.

MOFFATT, in Scotland, 400 feet above sea-level, is well known for its damp climate and its cold mineral water springs, which contain sulphur, sulphate of lime, sulphate of soda, and chloride of sodium, and are slightly aperient. They are useful in cutaneous affections.

PENZANCE is the most equable and most humid of all English health resorts, being cooler in summer and warmer in winter than any other. The sea breezes are remarkably strong and pure, and very suitable to those invalids whose lungs are not irritated by strong warm winds, and who require a moist climate. For most people this climate is too relaxing, even in winter. The protection from the north is not quite as good as could be desired.

PURTON SPA, near Swindon, possesses a spring containing small quantities of carbonate of potash and carbonic acid, which has a reputation for being curative.

QUEENSTOWN, in Ireland—*vide* Cove.

REDRUTH, in Cornwall, possesses a spring which, if all that is said of it be true, must be of great value. It is situated at the bottom of a mine, and is said to contain a large quantity of lithium, besides an amount of common salt, which has hitherto prevented the water being utilised.

ROTHESAY, the capital of Bute, is a very good winter health resort, mild and equable, though rather humid. It is well protected from the east winds, and has a mean annual temperature of  $41\cdot25^{\circ}$  F., while its mean temperature in winter is  $39\cdot62^{\circ}$ , in spring  $46\cdot66^{\circ}$ , in summer  $58\cdot2^{\circ}$ , and in autumn,  $48\cdot59^{\circ}$ .

ST. LEONARDS-ON-SEA—*vide* Hastings.

SCARBOROUGH, the queen of watering-places, is without question the most beautiful in England, and possesses two weak bitter-water wells—one, the South Well, containing 28 grains of sulphate of magnesia, 13·8 of sulphate of lime, 6 of carbonate of lime, 3·7 of common salt, and ·23 of iron; the other, the North Well, contains only 17·8 grains of sulphate of magnesia. They are considered to be tonic and aperient, but are generally found to lie heavily on the stomach, owing to the quantity of lime they contain. During the season, from August to November, this is a celebrated resort for invalids, especially those afflicted with scrofula. In the spring it is very bleak and cold.

SHAP, near Penrith, possesses a good sulphur

spring, besides very good baths, and has a large number of visitors annually. It is situated at an elevation of 1,000 feet above sea-level, and has a very bracing climate.

SHELFANGER SPA is situated two miles from Diss, in Norfolk, ninety-five miles from London, and twenty-one miles from Norwich, and bids fair to become one of the most popular of baths. It possesses a very good mild chalybeate spring containing (per gallon) salts in the following proportions, viz. carbonate of magnesia 28·58 grains, carbonate of lime 2·45, carbonate of iron 2·90, chloride of magnesium 4·81, sulphate of magnesia 0·49, sulphate of lime 1·20, sulphate of soda 3·00, ammonium chloride 1·70, silica 0·21, and a large quantity of carbonic acid. The waters are tonic, antacid, slightly purgative and saline, and are particularly useful in anæmia, chlorosis, atonic dyspepsia, chronic constipation, and general debility. The little village of Shelfanger is situated in a shallow valley about 140 feet above sea-level, on a gravel soil, and well protected from the north, and possesses an invigorating climate, the mean temperature being in summer 60·1°, with a range of 54°, and in autumn 49·1, with a range of 56°, and the annual rainfall 26 inches. There is an excellent spa-house, under the able management of Dr. and Mrs. Farrington, and boating, archery, lawn-tennis, and other healthy amusements may be had *ad lib.* J

shall be surprised if this health resort does not become one of the most popular in the country.

SIDMOUTH is one of the most protected watering-places in England, and is almost certain to become before long a popular winter health station. It is open *only* to the south, and the cliffs, which almost surround the town, have a magnificent appearance. Not one of the south coast health stations can claim superiority to Sidmouth in regard to equability of climate, together with protection from the north, east, and west winds. At present it is quite neglected, and there are no really good hotels. The temperature is about four degrees warmer than London in winter, and it is said to be the driest of the Devonshire watering-places. The one, and about the only fault the place has, is that of being rather relaxing at times, but not as much so as Torquay.

SOUTHPORT, in Lancashire, is a celebrated winter health resort for consumptives, having a remarkably mild and dry winter climate, and being built on a sandy and very absorbent soil. The rainfall is small. The sea recedes to an unusual distance, and never comes quite up to the town, leaving a large expanse of sand, which gives it sometimes a strange appearance. In the summer the climate is very relaxing.

STRATHPEFFER is the most northern of our British

spas, being situated in a narrow valley at the bottom of Ben Wyvis, in county Ross. It possesses several strong sulphur wells, the principal one of which contains about three cubic inches of sulphuretted hydrogen, 16 grains of lime salts, and 7·5 of sulphates of magnesia and soda. The waters are usually taken before and after breakfast, are strongly diuretic, and are very useful in rheumatism, dyspepsia, and skin diseases.

TENBY is a beautiful Welsh watering-place, situated on the western side of the Bay of Carmarthen, at an elevation of 100 feet above sea-level. It is well protected on the north and east, and open to the south-west, which makes it a valuable winter resort for invalids. The climate is equable, dry, and bracing, and is suitable to delicate lungs both in winter and summer.

THORP ARCH, in Yorkshire, possesses a salt spring which is said to be of value in many diseases.

TORQUAY is one of the most celebrated of English winter health stations, and is built on the slate and limestone terraces of three hills and in the valleys between them, surrounded by exquisite scenery, and almost entirely sheltered from the cold winds. It has the highest winter temperature in England, and, with the exception of Penzance, enjoys the greatest equability, but has the great disadvantage of a large number of cloudy days in the year, besides



not being quite protected from the east winds. The mean winter temperature is  $44.6^{\circ}$  F., the range  $29^{\circ}$ , the winter rainfall about 6 inches, the number of rainy days in winter 79, and in the year 154. This resort is most suitable for consumptives who require a mild, equable, and sedative climate.

TREFRILW, in North Wales, possesses strong sulphate of iron springs which are gaining in reputation.

TUNBRIDGE WELLS is situated at an elevation of 300 feet above sea-level, and possesses a weak but pure chalybeate spring containing a small quantity of carbonic acid and three grains of iron per gallon. The place has fallen into disrepute in spite of having a healthy and invigorating climate, as well as the best chalybeate spring in England. The bathing arrangements are, unfortunately, not good, the Grand Pump Room at the end of the Royal Parade (Pantiles) being far from what it might be. To make the waters more useful, the Seltzer or Appolinaris waters might be mixed with them.

VENTNOR (with Bonchurch) is a very celebrated health resort for consumptives, and is protected on the north, north-east, and north-west by high cliffs, at the foot of which lies a narrow strip of land, seven miles long, called the Undercliff. The town of Ventnor is built on a very permeable soil, on a number of terraces 150 feet above sea-level, facing

the sea, and open to the south, south-east, and south-west. The mean temperature in winter is  $41.89^{\circ}$  F., in spring  $49.66^{\circ}$ , in summer  $60.63^{\circ}$ , and in autumn  $53.58^{\circ}$ . The mean daily range in winter is  $7.71^{\circ}$ , and in spring  $12.55$ . The winter rainfall is about 7 inches, the number of rainy days in winter 80, and in the year 152. There is an excellent consumption hospital here.

WEMYSS BAY is celebrated for its good climate and its hydropathic establishments.

WOODHALL SPA, in Lincolnshire, is one of the most important of the English mineral waters, and is sometimes called the "Iodine Spa," on account of the iodine contained in it. One gallon of the water contains 1,215 grains of common salt, 105 of chloride of calcium, 86 of chloride of magnesium, about 5 of bromide of sodium, and about  $2\frac{7}{16}$  of iodide of sodium. Thus the water really is an iodo-bromated brine, with about 120 grains of common salt, half a grain of the bromide, and a quarter of a grain of the iodide to the pint. It is extremely doubtful whether the Woodhall water owes its value to the iodides and bromides. More probably its good effects are due to the large amount of chlorides contained in it. It is a very popular spa, with a good hotel, pleasure-ground, pump-room and baths, and is valuable in cases of gouty and rheumatic swellings and scrofula.

WORTHING is a small sea-side resort on the Sussex coast, not far from Brighton, and, although exposed to the east, is well sheltered from the north winds by the Downs, which makes it a place of some repute as a winter health station.

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## CHAPTER V.

## FRENCH HEALTH RESORTS AND SPAS.

IN describing the French Health Resorts and Spas, I intend to include those of the French provinces of Corsica and Algeria, as well as the only two of French-speaking Belgium. It is almost impossible to describe the climate of France without dividing it into sections, for the extent of territory is so great and of such a varied character, that the most opposite kinds of climate are met with, from the almost tropical one of Nice to that of bleak Dunkirk. France lies in the temperate zone, between the isothermal lines of  $50^{\circ}$  and  $60^{\circ}$ , and covers  $8^{\circ}$  of latitude. The south-east part, which lies along the shores of the Mediterranean sea, has the warmest and most equable climate, and is well-protected from the north winds by the chain of the Alps. The south-west portion is the next warmest and most equable, but

has a rather large amount of rain in the year. The central and northern parts have not such equable climates, but are tolerably dry. In Paris the heat in summer is often intense, and the frost in winter equally so, but the general absence of moisture makes both extremes less felt than they otherwise would be. On the whole the climate of France is about the best in Europe, and is often described as salubrious, serene, and bright. There are upwards of one hundred health resorts and spas in the country, the principal ones of which will be each separately described.

The climate of Belgium is somewhat similar to that of the north of France, but has rather more moisture in its atmosphere.

Algeria has a very different climate to that of France, and certain parts of it are much frequented in winter on account of their value as health stations. It is bounded on the north by the Mediterranean and on the south by the great Sahara desert, and its surface consists of a series of mountain ranges, the Atlas, and by the valleys formed by them. From the month of November to that of May, the hot atmosphere from the desert being constantly brought in contact on the Atlas mountains with the moist atmosphere from the Mediterranean, causes frequent and copious downfalls of rain into the valleys beneath; but in the summer months the air is intensely hot, and the moisture from the Mediter-

anean, instead of being cooled down and deposited as rain, passes away over the mountains, leaving behind it a parched and thirsty land. During the summer nights, however, there are heavy dews, which make things somewhat better than they otherwise would be, but even these are often absent when the hot wind called the scirocco blows from the desert. Thus for six months of the year Algeria is a fertile and pleasant country, while for the remainder it is intolerably hot and dry.

Corsica, being an island, has a very equable climate, the value of which is further enhanced by a double range of mountains which run from north to south, and which completely protect the western portion of the island from the scirocco, which blows from the south-east and is loaded with fine sand. From the base of the western range, a number of smaller ranges run in a westerly direction, forming deep and lovely valleys, thoroughly protected not only from the scirocco, but also from the north winds, and consequently having a very warm and equable though moist winter climate. There are several health resorts in the island, which will now be enumerated, with those of France, Belgium, and Algeria, in alphabetical order.

ABREST is a small alkaline spa adjoining the much larger one of Vichy.

AIX-LES-BAINS is a very celebrated and fashion-

able French spa, situated 790 feet above sea-level, in Savoy, close to the Lake of Bourget in the beautiful scenery of the Alps, on the railway from Lyons or Geneva to Mont Cenis, and fifteen hours from Paris, *viâ* Macon. The springs are very rich sulphurous waters of a high temperature, ranging from 107·6° to 113° F., and the arrangements and methods are perfect. Separate baths, common baths, every variety of douches and vapour baths, steam baths, and inhalation rooms abound, with a plentiful supply of water. During the season from May until September, the population of the little town of 4,000 inhabitants is increased to 14,000 souls, and is quite as fashionable as the most frequented of the German baths; in fact, it is then so crowded that people have frequently to take their baths between two and three o'clock in the morning. The thermal establishment consists of a splendid granite building on the side of the hill, supplied by two springs, and containing upwards of three hundred baths of every variety. Close by are the ruins of the ancient Roman baths, and in the mountains near the town are enormous and lofty caves, from whence come the warm sulphurous waters, which contain small quantities of the carbonates of lime and iron, the chlorides of calcium and magnesium, and the sulphates of lime, magnesia, and soda. They are valuable in chronic rheumatism, enlarged joints, rheumatic gout, and especially in chronic skin diseases.

AJACCIO is situated on the north-west side of a beautiful bay on the west coast of the island of Corsica, of which it is the capital town, facing due south, and being protected from the north, north-east, east, and south-east winds, by the mountains which rise at a distance of twenty miles from the town, and are slightly capped with snow all the year round. Owing to its protected situation, it has a particularly mild and equable climate, and is one of the loveliest spots in Europe, but is exposed at times to the strong south-west winds from the Mediterranean, which often blow with great violence. The climate is very similar in winter to that of Algiers, but in summer is far preferable to it, though both are unsuitable as residences for invalids except during the winter months, and then only for such as require *moist mild* climates.

ALGIERS is a large city occupying the western extremity of a beautiful bay on the southern shore of the Mediterranean, and faces the north. It has a very French appearance, sometimes giving one almost the impression that it is Paris itself instead of Algiers. The best and healthiest parts of the town are the eastern suburbs, called Mustapha Superior and Inferior, which are built on the slopes of the hill, the Sahel, at the back of the town. The climate of Algiers, although a remarkably warm one in winter, has many drawbacks. In the first place it is exposed to the north, north-east, and north-



west winds, which, although sea winds, are yet sometimes very cold; and in the second place it is a very moist climate indeed, and totally unsuitable for invalids requiring a dry atmosphere. The sci-rocco, moreover, which in summer is so hot, in winter is often very cold, from passing over the snow-capped Atlas mountains. The mean annual rainfall is about 96 inches, and of this six-sevenths, or about 81 inches, fall in the winter months; and there are generally about 90 rainy days in the year, mostly, of course, during the winter months. The mean summer temperature is about  $75^{\circ}$ , and the mean winter temperature about  $57^{\circ}$ .

ALLEVARD is a cold sulphurous spring situated in an Alpine valley, about 1,450 feet above sea-level, amidst beautiful scenery, near the Grenoble railway. The waters contain a good amount of carbonic acid which makes them very valuable; and the principal cases that derive benefit from their use are affections of the breathing apparatus. There is a whey cure establishment here.

AMÉLIE-LES-BAINS is a small village containing about 800 inhabitants, and lying 700 feet above sea-level, in the department East Pyrenees, close to Arles, on the route from Perpignan to Barcelona, from the former of which it is reached in four hours by carriage. It is built in a semi-circular form, at the foot of a hill on the right bank of the river

Tech, with lofty masses of rocks overhanging it, from which streams flow, and is one of the most rising of southern French health resorts, being suitable in summer to those who require thermal sulphurous waters, and in winter to those who require a mild climate. There are several thermal establishments at which chronic rheumatism, skin diseases, neuralgia and sciatica, kidney affections, and female complaints are principally treated. Also hot inhalations, vapour baths, and steam baths may be had if required. The temperature of the waters varies from 92° to 145°.

AMPHION is a small spa lying near the lake of Geneva, not far from Lausanne, having waters of the indifferent class, which are said to be useful in neuralgia and indigestion.

ARCACHON is a very pretty town about thirty-two miles from Bordeaux, near the Bay of Biscay, with which it communicates by a narrow channel. It consists of a large number of isolated dwellings, with mangolias, oleanders, and orange trees around them, making the place look like a huge cluster of Indian bungalows, and with the small inland bay upon the shores of which it stands is surrounded entirely by pine forests, between which and the town chalets are built on the sides of the sandstone hills for the reception of invalids. The climate is remarkably mild, the thermometer (F.) rarely falling

to freezing point, and then only close to the beach, and the force of the winds is broken by the forests, which give quite a balsamic odour of turpentine to the atmosphere, making the place of considerable value in pulmonary affections. There is a rather large amount of rain, and the atmosphere is generally moist. The climate here is somewhat similar to that of Bournemouth.

AUTEUIL is one of the western suburbs of Paris, near the Bois de Boulogne, and possesses springs containing sulphates of iron and lime, and a little hydro-sulphuric acid. They are considered to be very tonic, and are much used by the Parisians.

Ax, in department Ariège, Eastern Pyrenees, about 2,800 feet above sea-level, possesses the hottest waters in the Pyrenees, and the largest supply of thermal sulphur waters in Europe, which are subject to rapid decomposition. There are three bathing establishments in the village, which is a miserable place, but has fair accommodation for visitors and is well situated.

BAGNÈRES DE BIGORRES is a very old town of 10,000 inhabitants, situated at the foot of the mountains in the valley of the Adour, and between the valleys of Tarbes and Campan, in the Pyrenees, and may be reached in thirty-six hours from Paris by railway *viâ* Bordeaux. It is one of the most popular of French baths, and its bathing establishments are

admirably arranged, and on a large scale. Its aspect is decidedly Spanish, the climate mild, and the streets clean, narrow, and winding, with every third house an hotel. There is a large supply of thermal earthy water, and of thermal saline sulphurous water, the town being built over a subterranean thermal stream, from which numerous springs issue. These vary considerably both in their temperatures and in their properties, the waters of "La Reine" and of "Lasserre" being mildly laxative and stimulant, whilst those of "Foulon," "Petit Barèges," and "Salut," act as sedatives to the nervous system. The complaints usually benefited here are chronic mucous discharges from the lungs and other organs, anæmia, constipation, dyspepsia, and enlarged spleen and liver.

BAGNÈRES-DE-LUCHON, in department Haute-Garonne, is one of the most beautiful of the Pyrenean spas, close to the Spanish frontier, and may be reached in forty hours from Paris by rail *viâ* Bagnères-de-Bigorre. It has a very mild climate, is beautifully situated in a wide valley, 2,000 feet above the sea-level, and has upwards of thirty thermal sulphur springs, varying in temperature from 63·5° to 132·8°, besides one chalybeate and one acidulous spring. The bathing establishments are excellent, the life is agreeable and amusing, the accommodation for visitors better than at most of the neighbouring spas, and living comparatively cheap

and good. The complaints benefited by the waters are skin diseases and affections of the nervous system.

BAGNOLLES-DE-L'ORNE is situated in the middle of a large forest in Normandy, about an hour's drive from the nearest railway station, and has large well-appointed bathing establishments, with sulphur waters of a temperature of 80·6° and chalybeate springs without much carbonic acid. The diseases treated here are skin diseases, dyspepsia, enlarged joints, and neuralgia.

BAINS is a very small and quiet spa near Plombières, with two bathing establishments and indifferent thermal waters, precisely the same as those of Plombières. For people who prefer a quiet place to a more fashionable one this place is very suitable.

BALARUC-LES-BAINS is a small spa about fifteen miles south-west of Montpellier, having thermal alkaline, and muriated springs, with a temperature of 118°. It is situated on the edge of a salt lake, and has establishments for vapour baths, douches, mud baths, &c. The climate is mild and equable, and paralysis is the chief complaint treated.

BARÈGES is a small village, made up of one long street, overhanging a mountain torrent, called the Gave of the Bastan, and, although a wild and desolate spot, is the most celebrated of the Pyrenean

baths. It is situated in the department Hautes-Pyrénées, about 4,000 feet high, has a rough, variable climate, and a scanty supply of water. In winter not only the visitors but the regular inhabitants have to emigrate to a warmer and more genial climate, and were it not that the waters have an enormous reputation, there would hardly be a single resident in the village. There are nine thermal sulphurous springs here, the temperatures of which vary from 86° to 112°, and whose waters contain a great quantity of barégine, a nitrogenous organic and gelatinous substance which is found in nearly all thermal sulphur springs, and which derives its name from Barèges. These waters are reported to be the most exciting of all the Pyrenean baths, and are said to be of great service to paralytics, who swarm the place in summer. People suffering from diseased bones and old wounds, rheumatism, neuralgia, and eczema are also said to be much benefited. The saline matters found in the waters are sulphates of soda and lime, silica, chloride of sodium, and small quantities of iron and iodine.

BASSÈRE (LA) is a small spa four miles from Bagnères de Bigorres, in the Pyrenees, possessing a cold sulphur spring.

BASTIA is the largest and most prosperous town in Corsica, and possesses a remarkably mild, though humid, winter climate. Owing to its situation it is

hardly suitable to all cases of consumption, as it faces due east, and thus is exposed to cold winds in winter, as well as to the scirocco all the year round. It is, however, a very charming sea-side residence, with a mild and equable moist winter climate, a good hotel, and several well-educated French physicians.

**BAUCHE (LA)** is a new spa, near Les Echelles, and not far from Chambéry, in Savoy, 1,500 feet above the level of the sea, and possessing a pure and strong chalybeate well, but with no carbonic acid.

**BERCK-SUB-MÈR** is a small sea-bathing village in Picardy, about nine miles south-west of Montreuil, the climate of which is celebrated in the treatment of scrofula.

**BEX** is situated in the valley of the Rhone, in a very sheltered situation, on the Lausanne-Sion line, not far from the Lake of Geneva, 1,880 feet above sea-level, and possesses a mild refreshing climate, with beautiful promenades, a grape-cure establishment, and very strong cold sulphur and muriated springs. It is highly recommended for delicate lungs in the early spring, both on account of its mild climate, and its soot baths.

**BIARRITZ** is a very fashionable watering place, six miles from Bayonne, and within a journey of five hours from Bordeaux, and is celebrated as a resort for consumptives in the autumn, but, on account of its large number of rainy days (120 annually), its

humid atmosphere, and its liability to storms and frequent and sudden changes of temperature during the winter and spring months, it is at these seasons of the year totally unsuitable for pulmonary invalids.

BISKRA is an Algerian spa, situated in an oasis of palms, about two days' journey from Constantine. The climate is hot in summer, but in the winter, which is the season, it is very agreeable. The waters are indifferent thermal, and sulphurous. There is a good hotel at the spa.

BOURBON L'ARCHAMBAULT, thirteen miles from Moulins, is a rather dull and uninteresting spa, possessing weak thermal muriated saline and chalybeate springs, celebrated in the neighbourhood for the cure of rheumatism, paralysis, gun-shot wounds, and eye diseases.

BOURBON LANCY is a short distance from Moulins, and was once a favourite resort of royalty. It possesses thermal muriated saline springs, and an enormous establishment with a vast swimming bath, which is rapidly tumbling into decay, owing to its being almost entirely neglected and deserted.

BOURBONNE-LES-BAINS, in the Haute-Marne, is the French Wiesbaden, and one of the chief thermal muriated saline springs in the country, its waters containing (per pint) 46 grains of chloride of sodium, and 6 cubic inches of carbonic acid, and having a



temperature of  $188.2^{\circ}$ . The chief uses of the waters are in cases of chronic articular rheumatism.

BOURBOULE (LA) is situated in the Auvergne, 2,600 feet high, four miles from Mont d'Or, and about four hours' drive from Clermont-Ferraud. It has several alkaline muriated thermal springs, varying in temperature from  $54^{\circ}$  to  $125^{\circ}$ , and containing in various proportions the carbonates of soda and magnesia, chloride of sodium and sulphate of soda, with a small quantity of arsenic. They are useful in paralysis, thickened joints, congested liver, and intermittent fevers.

CANNES is a seaport town, in department Alpes-Maritimes, seven miles south-east from Grasse, on the road from Toulon to Nice, from which it is about twenty-one miles. It is situated at the extremity of the magnificent Bay of Cannes (or Napoule), in a wonderfully beautiful spot, being surrounded by pine forests and a peculiarly luxuriant vegetation, of which a large portion consists of odoriferous plants and flowers. The plain on which the town stands is enclosed on the north and west by the Maritime Alps and the Estrelles, which barrier protects it from the north-west, or mistral wind, which is so violent in March; but on the east the mountain chain is incomplete, leaving the place entirely exposed to the prevalent east and south-east sea breezes; the Lérins islands protect it from the south

winds. The population of the town is 8,000, which is increased during the season, from November to March, by 2,500 visitors, and the principal street is built along the high road to Nice, being separated from the coast by a public promenade, above which on the hill, are the ancient church of Nôtre Dame d'Esperance, and the splendid castle of the Duke de Valambrosa. The climate is moderately warm in winter, and very equable, the mean annual temperature being about 60°, whilst that of the winter is about 50°, spring 62°, summer 71°, and autumn 55°. There are fifty-two rainy days in the year, being twelve more than at Hyères, and eight less than at Nice, but the annual rainfall at Cannes is only twenty-five inches, being two inches less than that of Hyères, and the same as that of Nice. It is said that Cannes owes its fame as a health resort to the strong electrical condition of its atmosphere, which renders the climate so very exciting, and so valuable in cases of consumption where there is low vitality and nervous debility. The bay of Cannes is divided into an eastern and a western portion, the former more sheltered than the latter, which, however, is more attractive on account of its beauties and lovely gardens. Le Cannet, a small village up the valley from the eastern bay, is very sheltered, and much preferred by those who require shelter from wind.

CAUTERETS is a much frequented sulphur spa in the

department Hautes-Pyrénées, situated about 8,200 feet high, in a lovely valley on the banks of the Gave, between snow-covered hills. The houses are built on each side of a long narrow street, divided by the large square containing the Hotel de Paris, from which a footpath leads up the hill to the thermal establishment, which is replete with all modern improvements, and supplied from the mineral springs on the hill. The springs are twelve in number, varying in temperature from 86° to 131°, and are divided into two groups, *les sources de l'est*, and *les sources du midi*, differing from each other but slightly. They contain sulphuret of sodium, sulphate of soda, chloride of sodium, silica, and small quantities of sulphuretted hydrogen, being therefore sulphurous thermals, and are useful in pulmonary affections, especially chronic bronchial catarrh, for the cure of which the Raillère spring has quite a reputation. The season lasts from May until October, and besides the value to be obtained from the use of the waters, the greatest fun is to be had in watching the crowd of visitors, of all nationalities, daily climbing the hill, in all kinds of conveyances, to reach the establishment, and making pic-nic parties into the remote recesses of the Pyrenees close at hand.

CHALLES, two miles from Chambéry, although possessing no establishment, yet possesses the longest sulphur-well known, containing iodide of

potassium, bromide of sodium, and sulphuret of sodium. These valuable waters are exported.

CHAUDEFONTAINE, the first Belgian spa on the route to Cologne, about fourteen hours from London, is a lovely little place, possessing indifferent thermal waters, somewhat similar to those of Buxton. It is more frequented on account of its lovely scenery than for its waters.

CHAUDES AIGNES is situated in a gorge separating Auvergne from Gevandan, and possesses weak thermal alkaline springs, having a temperature of  $148^{\circ}$  to  $178^{\circ}$ , and which are much thought of in cases of rheumatism and enlarged joints.

CONTREXEVILLE, in the Vosges, may be reached in twelve hours from Paris to Neufchâteau, and thence by coach. It is situated in a narrow valley, 1,000 feet high, and possesses three cold earthy springs, the principal one, *la source de Pavillon*, containing large quantities of sulphates of lime and magnesia, besides a little of the sulphates of soda and potash, and the chlorides of sodium, potassium, magnesium, and traces of iodine, strontium, and arsenic. It is celebrated as a resort for those suffering from gravel and gout.

CRANSAC is a small spa situated in a lovely valley in Auvergne, close to an ancient volcanic hill, which even now emits sulphurous fumes. The waters are earthy, and contain large quantities of alumina and

sulphates of lime and magnesia, with a little manganese. They have a great reputation in liver and spleen enlargements, but the majority of visitors inhale the hot sulphur fumes, which are evolved into the interior of large caves excavated out of the volcanic hill close by.

Dax is a very ancient town in the Landes, situated on the Adour, between Bordeaux and Bayonne. The springs are very powerful thermal indifferent waters, containing sulphates of lime and soda, with a little chloride of sodium and carbonate of magnesia, and are said to be useful in the treatment of rheumatism. The fountain of *Nelse* has been in high repute since the tenth century, but latterly the place has been deserted, except by the people of the district, who surround the front of the basin containing the principal spring water, and which has a temperature in the basin of  $125^{\circ}$ , and in the spring of  $156^{\circ}$ , in the early morning, and drink a long draught, after which they fill their tin vessels, which are strapped across their shoulders, and return to their houses. This proceeding is repeated day after day by the Dax people, who now have the place all to themselves.

EAUX BONNES is situated 2,300 feet above sea-level, in a narrow ravine at the foot of the Pic du Ger, in the department Basses Pyrénées. It is subject to great changes of temperature during the day, but has, on the whole, a mild climate. In atonic

phthisis, asthma, hepatisation of the lungs, and laryngeal and pharyngeal affections, it is, owing to its elevated situation, very valuable. The highest temperature is  $91.4^{\circ}$ , and there are 98 rainy days out of 75 in the summer. There is a thermal sulphur spring here with bath-house and inhaling-rooms.

EAUX CHAUDES is situated near Eaux Bonnes, but further on in the valley, in a wild ravine 2,100 feet high, and possesses a sulphur spring with a handsome thermal establishment, celebrated for the cure of chronic rheumatism and chlorosis. The season is from June to October, but the number of visitors is very small.

ENGHIEN-LES-BAINS is a very pretty place just outside Paris, with a charming lake and mild cold sulphur springs, which are used for drinking and bathing. These waters have a large reputation amongst Parisians.

ESCALDAS is a picturesque place not far from Ax, possessing thermal sulphur waters with temperatures varying from  $90^{\circ}$  to  $106^{\circ}$ . It has a mild climate, and from its high elevation is valuable in consumption. The waters are useful in skin diseases.

EVIAN-LES-BAINS lies on the south side of the Lake of Geneva, nearly opposite Lausanne, and possesses an indifferent thermal spring. The climate is mild and refreshing in the spring and autumn, but the heat of summer is very great. The waters

are considered to be sedative, and are valuable in neuralgia and indigestion.

**FORGES-LES-EAUX** is a dull spa situated in department Seine-Inférieure, and possessing a good chalybeate spring, useful in cases of chlorosis, dyspepsia, and diarrhœa.

**GUAGNO** is a Corsican spa of great repute in the island, and possesses sulphurous springs with a temperature of  $105.8^{\circ}$ . The town is prettily situated in a valley between two mountains, three miles from Vico, and surrounded by a dense forest of chestnut trees. The climate is mild and equable, though moist.

**GUITERA** is a Corsican spa possessing sulphurous springs with a temperature of  $104^{\circ}$  to  $180^{\circ}$ . The place is well situated, and will probably be before long made habitable for civilised people, which at present it is not.

**HAMMAM MESKOUTIN** (or **MESKROUTIN** or **MELÔUANE**) is an Algerian spa, situated in the province of Constantine, not far from Quelma, and possesses a large number of muriated saline, sulphurous, and chalybeate springs, varying in temperature from  $115^{\circ}$  to  $208^{\circ}$ . According to Dr. Hermann Weber they are chiefly indifferent thermal waters, having a very high temperature, surpassed only by the Geysers in Iceland. Rheumatic and gouty affections, paralysis, malarious cachexia, old gunshot wounds, and skin

diseases are the principal maladies treated here. The accommodation is cheap and fairly good, and the season is from May to October. These baths are the *Aqua Tibilitina* of the Romans.

HAUTE RIVE is a small alkaline spa not far from Vichy.

HYÈRES is a charming health resort about twelve miles from Toulon on the road to St. Tropez, thirty miles further south than Mentone, and about two miles from the coast of the Gulf of Lyons. It has a population of about 12,000 inhabitants, is beautifully situated and bright and sunny, but unfortunately has not sufficient mountain shelter, so that the mistral blows frequently and with great violence over the town. The sun is very powerful, and makes the summer almost unbearable; but the winter climate is very mild and exceedingly dry, snow falling in the town very slightly about once in three years. The average winter temperature is  $46.18^{\circ}$ , the annual rainfall about 27 inches, and the number of rainy days 62 in the year and 17 in the winter. As a rule foreign invalids inhabit the modern portion of the town, which is built at the foot of a steep hill, and the climate of which is said to be warmer and more equable in winter than that of Nice.

LAVEY, situated 1,850 feet above the level of the sea, in the Rhone valley, near St. Maurice, possesses



which are warm, and consequently do not trouble consumptives much. The warmth of the winter atmosphere at Mentone is about equal to that of Palermo, five degrees farther south, as is obviously shown by the groves of lemon and orange trees which grow in the open air, flowering all the year round, to be gathered at four different times. According to Dr. Bennet, there is sometimes a great difference in the degree and severity of the cold from year to year. In the more severe winters, with a northerly wind, he has known the thermometer to descend below freezing point on several consecutive nights near the sea-shore. Slight films of ice have also occasionally formed at points which are exposed to the down draughts from the mountains, and snow has been known to fall on the shore-level, melting as it falls. In January 1864, according to the same author, there was a frost of unusual severity throughout the south of Europe, especially in Italy and Spain, and at Mentone it froze on the sea-level on several consecutive nights, snow falling on the shore-level. This severe weather killed a large number of lemon-trees and destroyed much fruit; and it is expected that there will be a recurrence of the disaster very soon, as an exceptionally severe winter usually happens about once every twenty or thirty years. Besides the beautiful groves of lemon and orange trees, the hills are covered with olive, apple, pear, cherry, and fig trees, as also vines, from which

are procured fine-flavoured grapes. Sweet-smelling wild violets, geraniums, and other flowers may be gathered in the open air in December. The average rainfall is rather higher than at Nice, and the average number of days or nights, according to M. de Bréa, during which it rains little or much, is 80, or 20 more than at Nice. The mean annual temperature is  $60^{\circ}$ , with a maximum in August of  $80^{\circ}$ , and a minimum in January of  $32^{\circ}$ . The mean winter temperature is  $52.25^{\circ}$ , and that of January  $48^{\circ}$ , that of February  $48^{\circ}$ , March  $52^{\circ}$ , April  $57^{\circ}$ , May  $63^{\circ}$ , June  $70^{\circ}$ , July  $75^{\circ}$ , August  $75^{\circ}$ , September  $69^{\circ}$ , October  $64^{\circ}$ , November  $54^{\circ}$ , and December  $49^{\circ}$ . The season lasts from the end of September until the end of March, and on no account should consumptives remain here during the summer months.

MONT DORE lies 3,800 feet above sea-level, in the valley of the Dordogne, amongst the Auvergne mountains (department Puy-de-Dôme), and possesses a cold and several warm alkaline springs, the latter of a temperature of about  $107^{\circ}$ , containing bicarbonates of soda, magnesia, lime, and protoxide of iron, chloride of sodium and carbonic acid, which have a reputation in the treatment of chronic bronchitis and incipient consumption, and also in rheumatism and paralysis; but it is probable that the elevated situation of the place has a good deal to do with its cures of the respiratory affections.

The season is from the middle of June to middle of September.

MONTPELLIER, in the south of France, once the best known and most frequented health resort in France, is now eclipsed by more favoured places. The town is situated on a hill in the centre of a sandy plain, and has a warm though variable winter climate. The mean annual temperature is  $56^{\circ}$ ; that of winter  $41^{\circ}$ , spring  $55^{\circ}$ , while the mean daily range is  $12^{\circ}$ . The annual number of rainy days is 58. The atmosphere is dry and warm, and suitable for cases of humoral asthma, chronic laryngeal and bronchitic affections, with profuse expectoration; but owing to the sudden decrease of temperature, with heavy fall of dew at sunset, it is incumbent on invalids to remain indoors after dusk.

NERIS is a rather dull, but pretty, spa, 800 feet above the level of the sea, in the department Allier, not far from Mont Luçon, and possesses weak thermal alkaline springs, ranging in temperature from  $114^{\circ}$  to  $125^{\circ}$ , and containing small quantities of carbonates of soda and lime. The summer is very hot. Neuralgia, hysteria, chronic rheumatism, and uterine complaints are benefited by these waters.

NICE, the French Brighton, is situated on the verge of a valley formed on three sides by the Maritime Alps, and opening on the south to

the Mediterranean. It is 170 miles from Marseilles, and 213 from Genoa, has a population of 60,000, and is built around the base of a lofty promontory, surmounted by the ruins of a fortress. The river Paillon flows through the town, and empties into the Mediterranean, having a handsome boulevard on the eastern bank, and the *Promenade des Anglais* on the western bank, which is the most exposed and the most dusty part of the town. The climate is dry, warm, tonic, and exciting, the mean annual temperature being 60°; that of winter 47·75°, spring 55°, summer 71°, and autumn 62°. The temperature varies from month to month not more than two or three degrees. The average number of rainy days are 72 in the year, and 38 in the winter; the average number of bright cloudless days 229 in the year, and of cloudy days, 66; the average rainfall 26 inches. In winter the prevailing winds are the north, east, and south, the former being attended with cold, dry weather. The mistral is to a great extent, though not altogether by any means, shut out by the mountains between Fréjus and Cannes. On the whole, although the climate of Nice is warm and dry, yet the town itself is not at all suitable for consumptives to reside in during the winter and spring, the only locality at all adapted to the treatment of phthisis being the suburb of Cimiez, which is situated rather less than three miles away, at a moderate elevation, and shel-

tered well from the winds by the mountains, which are covered with olive trees. The climate of Cimiez is quite different from that of Nice, in the neighbourhood of the *Promenade des Anglais*, being far more protected from the winds, more free from dust, and, moreover, the place is *quieter*. Carabacel and Villefranche are very similar to Cimiez, and are close to the town. The diseases most benefited by a residence at Cimiez are consumption, with profuse expectoration and great debility, scrofula, and chronic bronchitis.

OLETTE is a small spa situated on the river Tet, 1,800 feet high, and on the route from Perpignan and Prades to Escaldas. It is noted for its thermal sulphur springs, which vary in temperature from 81° to 136°, and are very abundant. Rheumatism and skin diseases are principally treated here.

OREZZA is a Corsican spa, situated thirty miles south of Bastia, amidst forests of chestnut trees, and is renowned all over Europe for its strong chalybeate spring, which contains a very large percentage of carbonic acid. The spring is leased to the Vichy Company, who have built an hotel and a bath establishment. Close by is another spring containing iron and sulphur, which is much thought of in cutaneous affections (Dr. Henry Bennet). The town has an excellent climate, being surrounded with mountains, and at a good elevation, which,

added to the value to be derived from the waters, makes the place most valuable for anæmic and chlorotic people and invalids generally.

PASSY is a suburb of Paris, possessing a chalybeate spring, much thought of in the neighbourhood.

PAU is the principal town of the Basses Pyrénées, situated 650 feet above sea-level, on a flat plain, and possessing beautiful promenades, but a very cold, variable, damp, and dreary winter climate. It was once considered to be a very valuable health resort, but is fast losing its great reputation, but, unfortunately for visitors, not its abominable odours. The average annual temperature is  $56^{\circ}$ ; that in winter  $44.6^{\circ}$ , spring  $54^{\circ}$ , summer  $70^{\circ}$ , and autumn  $58^{\circ}$ ; and there are about 24 days, as a rule, with cold below freezing point. The average number of rainy days is 140 in the year, and the annual rainfall 42 inches. The climate is so variable that a difference of  $20^{\circ}$  has been often noticed between 9 A.M. and noon (Dr. T. M. Madden). The peculiarity of the climate is the remarkable stillness of the atmosphere. It is said that rheumatic people are positively made worse by residing here, and most certainly it is not a suitable place for consumptives, especially if at all debilitated to begin with. Spasmodic asthma, however, is greatly relieved by the influence of this remarkably still, moist atmosphere, as are also other spasmodic affections.

PIERREFONDS, a spa situated not far from Compiègne, on the shore of a lake, possesses a weak, cold, sulphurous spring, and a fair chalybeate. It is well patronised.

PIETRAPOLO is a Corsican spa, possessing good thermal sulphur springs, varying in temperature from  $110^{\circ}$  to  $146^{\circ}$ , and a very well-appointed establishment.

PLOMBIÈRES, the French Teplitz, is situated in a deep and narrow valley in the Vosges mountains, at a height of 1,810 feet above sea-level, and is twenty-five miles from Epinal. It possesses about twenty mineral springs, principally indifferent thermals, and also cold chalybeates. The chief diseases treated here are gastralgia and chronic catarrh of the stomach, also chronic rheumatism, neuralgia, lumbago, and joint affections.

POUGUES is a small spa in the valley of the Loire, not far from Nevers, possessing earthy waters, which contain the carbonates of lime, magnesia, and soda, and a small quantity of carbonic acid, and are useful in dyspepsia, gravel, and catarrh of the bladder.

PRESTE (LA) is a spa situated in a terribly wild gorge near the Spanish frontier, high up in the Pyrenees, on the river Tech, and can only be reached on foot or by mules from Amélie. It possesses a thermal sulphur spring of the temperature of  $118^{\circ}$ , which is used in cases of gravel and catarrh

of the bladder. The season is from June to August.

PUZZICHELLO is a cold sulphur spring in Corsica, with a great local reputation for skin diseases. It is, however, situated so low that its inhabitants frequently suffer from malaria. The waters are said to be similar to those of Schinznach.

ROYAT is situated 1,880 feet above sea-level, in a gorge, eight miles from Clermont-Ferrand, in the department Puy-de-Dôme, and possesses an agreeable refreshing climate, and several alkaline muriated acidulous springs, with temperatures varying from 66° to 96°. They are most useful in cases of anæmia, scrofula, gout, rheumatism, and mucous catarrh.

SAINT AMAND-LES-EAUX is a small earthy water spa in the department Nord, not far from Valenciennes, which enjoys a great reputation for its mud baths, prepared from the mud deposited by the springs, which consists of silica, carbonate of lime, and sulphuret of iron, with other combinations. The thermal establishment is one of the best in France, and the temperature of the waters is from 67° to 77°.

SAINT CHRISTAU lies about ten miles from Pau, in the Valley of the Asp, and possesses cold sulphur springs and a good hydropathic establishment. Chlorosis and skin diseases are said to be improved by a sojourn here.



SAINT GERVAIS lies in a valley about 2,000 feet above sea level, not far from Chamounix, and possesses several bitter-water springs, varying in temperature from 77° to 126°, useful in eczema, chronic bronchial catarrhs, and dyspepsia. There are good bathing and hydropathic establishments.

SAINT NECTAIRE, in the department of Puy-de-Dôme, possesses alkaline muriated acidulous springs, varying in temperature from 54° to 129°, which are said to be of value in scrofula, diseases of women, and ophthalmia. There are three good bathing establishments.

SAINT SAUVEUR is situated 2,525 feet high, in the department Hautes-Pyrénées, is essentially the spa of the French ladies, its waters being soft and agreeable to the skin, with a small quantity of sulphuretted hydrogen, and of the temperature of 98.56°. It has a mild climate, and also a large number of visitors annually in the season, from May to October. The complaints mostly treated here are those resulting from sexual diseases and nervous prostration.

SAINT YORRE is a small alkaline spa close to Vichy.

SOULZMATT is situated 850 feet above sea-level, in a valley of the Vosges, and possesses a cold alkaline acidulous water, containing a large quantity of carbonate of magnesia and carbonic acid. The water are chiefly exported.

SPA is a Belgian spa, and one of the most enjoyable on the continent. It is situated in a valley of the Ardennes, 1,000 feet above sea-level, and is quite sheltered from the north and east winds, which makes its climate remarkably pleasant and mild. The waters are powerful chalybeates, containing, in addition to the carbonate of the protoxide of iron, a large quantity of carbonic acid, which makes them very stimulating. There are several springs, but only one of them is really in the town, the others being away in different parts of the woods which surround the town, but very easily got at. The principal spring is the "Pouhon," which contains far more saline ingredients than any of the others, and which is situated in the centre of the town. Its temperature is  $52.1^{\circ}$ , and the solid ingredients as follows:—Bicarbonate of protoxide of iron 0.87, carbonate of lime 0.75, chloride of sodium 0.20, carbonate of soda 0.90, carbonate of magnesia 0.81, and silica 0.28. It also contains eight cubic inches of carbonic acid. The other springs are the "Geronstère," "De Barisart," a mile and a half from the town, the "Sauvénière," a few miles south-east of the town, which is quite sparkling from the amount of carbonic acid it contains, the "Groesbeck," close to the last-named, the "Condès," and the three "Tonnelets," which are by far the most agreeable of all the spa waters, and delightfully sparkling. These waters are very

valuable as stimulant tonics in cases of anæmia, chlorosis, atonic dyspepsia, and all debilitating complaints, and, in addition to this, tradition has it that whatever female drinks a glass of the "Sauvenière," standing with her right foot in the *Pied de St. Remacle*, a shoe-mark deeply engraved in the rock at the side of the well, will increase the population within a year. This is generally believed by the continental ladies. The surrounding country is beautiful.

URIAGE, situated in a beautiful valley, 1,800 feet high, in the department Isère, near Grénoble, possesses muriated saline sulphur springs and bitter-water springs, having a temperature of 80°, and is one of the strongest salt-water spas in France. The principal constituents of the water are chloride of sodium, sulphates of magnesia, soda and lime, and hydrosulphuric acid. There is also a chalybeate spring. These waters are valuable in chronic skin diseases, scrofula, glandular enlargements, and mucous catarrhs.

VAISSE is a small alkaline spa adjoining the much larger one of Vichy.

VALS, in a pretty valley in the department Ardèche, possesses a number of very important cold simple acidulated alkaline springs, some of them, such as "Magdeleine," "Précieuse," "Désirée," and "Rigolette," containing more bicarbonate of soda

and carbonic acid than the Vichy waters, and others, such as "Saint Jean" and "Dominique," have less. These waters are largely exported, and appear to be used indiscriminately by many, who thus enfeeble themselves.

VERNET (LE) lies at the foot of the Canigou, 2,000 feet high, in the department Hautes-Pyrénées, and possesses a mild climate, being sheltered from the east and south winds, which latter are very relaxing. It also possesses thermal sulphur springs, with excellent arrangements for all kinds of baths. Rheumatism is the chief complaint treated.

VIC-SUR-CÈRE is situated about 2,200 feet above sea-level, in a beautiful part of Cantal, and possesses an alkaline muriated acidulous spring, containing a large quantity of carbonic acid and sulphate of soda, which has given the waters great importance. They are very useful in urinary affections and liver congestions.

VICHY is the finest and strongest alkaline acidulous bath in Europe, and is situated on the Allier, 800 feet above sea-level, in a wide valley, with a very mild climate. It has the largest thermal establishment in France, and also handsome hotels and casinos, and beautiful and shady walks. The climate is too hot in summer. There are nine rich springs, the temperature of which varies from 50° to 110·2°. The most popular is the "Grande Grille,"

at 118°, which contains in 16 ounces 87·5 grains of bicarbonate of soda, 2·7 of bicarbonate of potash, 2·8 of bicarbonate of magnesia, 8·8 of bicarbonate of lime, ·08 of bicarbonate of protoxide of iron, 4 of chloride of sodium, 5 of silica, and 14 cubic inches of carbonic acid. All the springs contain pretty much the same quantities of all the ingredients. The other chief ones are "Puits Carré," "Hôpital," "Celestins," and "De Mesdames." The quantity of water usually drunk is two to four or six glasses. The principal complaints met with at Vichy are gravel, stone in the bladder, catarrh of the bladder, gout, and diabetes, also dyspepsia, enlargement of liver and spleen, and chronic rheumatism.

VITTEL is a small spa near Contrexeville, with precisely the same kind of waters as Vichy.

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## CHAPTER VI.

## GERMAN HEALTH RESORTS AND SPAS.

UNDER this heading will be included all the watering-places in the various kingdoms and states included in the empires of Germany and Austro-Hungary. The enormous tract of country known as Germany, in spite of its proportions, possesses a remarkably uniform mean annual temperature, excepting the small portion south of the Alps, which has a very varied climate. The other and far larger part of the empire is so uniform in its temperature that there is never a mean annual difference of more than 5°, the range being from 45° to 50°. This is owing to the fact that the northern part of the empire is very low ground, which renders its climate warmer than the latitude would imply, and that the southern part is very high ground, with the reverse condition of climate. The mildest climate is to be found in the valleys of the Rhine and Main. In

the remainder of the empire the winters are *very* cold, and the summers are *very* hot.

Austria differs materially from Germany in regard to its climate, which is as variable as it can possibly be, having a rainfall in its Alpine districts higher than any in Europe, while in Hungary it is very small indeed. In the north the average temperature is similar to that of France, whilst in the south the heat of summer is terrific and lasts about nine months of the year, the winter being very short and mild.

The following are the health resorts and spas of the two empires in alphabetical order.

AACHEN (Aix-la-Chapelle) is the principal of the German thermal sulphur spas and is situated in Rhenish Prussia, about 30 miles south of Spa, and at an elevation of 534 feet above sea-level, at the foot of a range of well-timbered mountains. The town is divided into two parts, the old town, in which are the wells, and the new town, where the visitors reside. The springs, also, are divided into two sets—the upper, or hot ones, and the lower, or warm ones—and contain chloride, bromide, iodide, and sulphuret of sodium, carbonate and sulphate of soda, sulphate of potash, the carbonates of lime, magnesia, lithia and iron, and silica. The “Kaiserquelle” is the one principally used for drinking, and has a temperature of 129·2°. The next most frequently used for drinking is the “Elisenbrunnen,”

which has a temperature of 110°, and is situated between the old and the new town. At these springs the visitors congregate daily, between the hours of 5 and 8 A.M., and again in the afternoon, for their potations and promenades. The quantity usually taken at one time is from 8 to 16 ounces, according to the fancy. There is a chalybeate well in the Theater Strasse, with a bathing establishment. The names of the springs beside those already mentioned are the "Emperor's Spring," "Cornelius Spring," "Rose Spring," and "Quirinus Spring." The arrangements at Aachen are excellent, and the douches are second to none in Europe. Rheumatism, gout, paralysis, atonic dyspepsia, biliary obstructions, and skin-diseases are the diseases principally treated.

ALEXISBAD lies in the charming Selke valley of the Hartz mountains, 1,350 feet above sea-level, and possesses good and cheap bathing arrangements. There are two chalybeate wells; one, the "Selkebrunnen," being used altogether for baths, and the other, the "Alexisbrunnen," which is similar to the "Pouhon" at Spa, being used for drinking only. There are pine-extract baths, hydropathic institutions, and a whey-cure establishment in the place. The waters are useful in anæmia, chlorosis, and general debility, and are very popular with the Germans.

ALTWASSER is a small chalybeate spa, situated 1,255



feet above the level of the sea, between Salzbrunn and Charlottenbrunn, in Silesia, and is a very attractive place for quiet people, being quite free from fashion and town life.

APOLLINARISBERG is a small and lovely spot in the Ahr Valley, close to Neuenahr, near the Rhine, and possesses a celebrated alkaline acidulous spring, the "Apollinarisquelle," or "Apollinarisbrunnen," from which source is obtained that well-known table water so often met with in this country, the Apollinaris water. The temperature is 62·6° F., and each sixteen ounces contains 9·6 grains of carbonate of soda, 3·5 of chloride of sodium, 2·8 of sulphate of soda, and 3·8 of carbonate of magnesia, with a small quantity of iron and 47 cubic inches of carbolic acid. This water is a useful mild aperient, and is very valuable in chronic bronchial catarrh, tendency to gall stones and gout, and in catarrh of the stomach.

ARNSTADT is a muriated saline spa in the Thuringian forest, 900 feet above sea-level, and surrounded by beautiful woods. There are whey-baths, sool-baths, pine-baths, and other conveniences.

AUSSEE is a very celebrated health resort and spa on the Traun, in Styria, in a beautiful and sheltered situation 2,075 feet above sea-level. It can be reached from Ischl or Lietzthal. The chief features of the place are the sool-bath and the sanatorium

of Dr. Schreiber, which contains cold-water and whey-cure establishments. The climate is very suitable for some forms of consumption, but does not suit hæmoptysis.

BADEN-BADEN is the most fashionable lounge, and one of the most picturesque and pleasant baths in Europe, situated 618 feet above sea-level, in a splendid valley not far from Strasburg. The climate is mild and agreeable in winter, and the hotels and establishments are on a magnificent scale. There are about thirteen thermal muriated-saline, or, as they are termed by some, indifferent springs, varying in temperature from  $114^{\circ}$  to  $154^{\circ}$  F., and containing 22 grains of fixed component parts in 16 ounces, including a trace of arsenic. The "Murquelle" contains also 0.4 and the "Fettquelle" 0.23 grains of chloride of lithium. The chief complaints treated here are chronic rheumatism and gout, abdominal congestions, and catarrh of stomach, but most people visit the place on account of its being a fashionable lounge, and not with the object of benefiting by the waters.

BADEN, near Vienna, situated in the beautiful forest of Wiener Wald, is one of the largest and most fashionable baths in Europe. The establishments and hotels are on a magnificent scale, with enormous swimming baths surrounded by balconies for promenaders, and a whey-cure house. The

waters are sulphurous, contain rather more sulphuretted hydrogen than those of the Swiss Baden, and have a lower temperature, the principal spring being 95° F., and containing, in 16 ounces, chloride of sodium 1·990 grains, chloride of magnesium 1·615, sulphuret of magnesium 0·125, carbonate of soda 0·532, sulphate of soda 2·128, sulphate of potash 0·489, carbonate of lime, 1·305, silica 0·185, sulphate of lime 5·656, and sulphuretted hydrogen 0·082. Chronic rheumatism and gout are the diseases here treated.

**BADENWEILER**, an indifferent thermal spa of the Upper Breisgau, in the Black Forest, not far from Mülheim, is situated 1,480 feet above the sea-level, and has a very mild climate, the prevailing winds being westerly. It is celebrated as a health station for chest complaints, and also for its whey-cure establishment. The temperature of the waters is 81° F, but the baths are generally taken at a higher temperature.

**BERTRICH** is a quiet spa in a narrow and charming valley of the Moselle, situated 500 feet above sea-level, and containing waters which have been described by some as glauber salt waters (alkaline-saline), whilst in reality they are simply indifferent thermal waters of a temperature of 95·5°, containing rather more salts than indifferent springs usually have. They are principally used in affections of the

nervous system, chiefly female. The climate is very mild, and the surrounding country exceedingly beautiful. Who has not heard of Ehrenbreitstein, the fortress of the Rhine? Well, Bertrich is but a short sail from there through Coblenz and along the beautiful Moselle, and is well worth a visit to anyone who may be in search of a quiet, cheap, old-fashioned and lovely spa, at which to rest quietly and enjoy that perfect repose which is so necessary to an overwrought nervous system.

BRUN is the most alkaline spring in Germany, and is situated close to Teplitz, in Bohemia. Its waters, which are chiefly exported, contain, in every 16 ounces, bicarbonates of soda 88 grains, of lime 4.8 grains, of magnesia 1.6, and of iron 0.08, sulphate of soda 6.8, chloride of sodium 2.9, and carbonic acid 88 cubic inches. Their temperature is 58.6° F., and they are used principally in catarrh of the bladder, gout, gravel, and diabetes.

BINGEN, a charming town at the commencement of the Rhine Gorge, not far from Mainz, is celebrated for its grape-cure establishments. This cure consists of simply eating a quantity of grapes under the supervision of a physician, who regulates the quantity, allowing sometimes three, sometimes six, and sometimes even twelve pounds daily; the grapes must be quite ripe and have thin skins, and after entering the stomach are deprived of their sugar, which

becomes absorbed and converted into lactic acid. The result of a course of this treatment, which need not be described at great length here, is to cause slight purging, improve the digestion and increase the secretion of bile. It is useful in dyspepsia, jaundice, and abdominal congestion.

BOCKLET is a chalybeate spa about two hours distance from Kissingen, up the valley of the Franconian Saale, and is situated 620 feet above the level of the sea. It has a mild climate and a rich spring containing in the pint 0·67 grains of carbonate of protoxide of iron, 6·54 of bicarbonate of lime, 8·60 of bicarbonate of magnesia, 4·48 of chloride of magnesium, 6·55 of chloride of sodium, 2·54 of sulphate of soda, 8·28 of sulphate of magnesia, and 89 cubic inches of carbonic acid. These waters are very beneficial in anæmia and chlorosis, atonic dyspepsia, and general debility.

BOLL (Bollbad) in Württemberg, is a weak sulphur spring used principally by the inhabitants of the place.

BOPPARD is a small place on the left bank of the Rhine, noted on account of having in its vicinity two largely-patronised hydropathic establishments—Marienberg and Mühlbad.

BRÜCKENAU, a secluded spa, 915 feet high, lying amongst the Rhön mountains, near Kissingen, possesses a pure chalybeate spring with one-tenth of a grain of iron and thirty cubic inches of carbonic

acid to the pint of water. There are excellent bath arrangements, with moor baths, vapour baths, and other conveniences.

BURTSCHIED is situated not far from Aachen, and possesses similar waters, the hottest spring having a temperature of 166°.

BUSSANG is a small weak chalybeate spa in the Vosges, near the Moselle. The waters, which contain a trace of arseniate of soda, are not much drunk on the spot, but are largely exported for table use.

CANNSTADT is a spa of considerable notoriety, not far from Stuttgardt, in a beautiful valley, 600 feet above the level of the sea, and possesses a very mild climate. The waters are simple muriated, or, according to some, indifferent thermals, with a temperature of about 68° F., and from 19 to 27 cubic inches of carbonic acid to the pint; are slightly aperient, and are very valuable in dyspepsia. There are also two excellent establishments here, one for the cure of chronic skin diseases and the other for the treatment of orthopædic cases.

COLBERG, a small town in Pomerania, on the coast of the Baltic, is a sool-bath of some repute in North Germany.

CRONTHAL, on the Taunus, near Soden, is situated 500 feet above the level of the sea, in a lovely valley, and possesses indifferent thermal springs, which are useful in skin diseases.

**DRIBURG**, in a lovely valley in Westphalia, a few hours from Paderborn, is situated 650 feet above sea-level, and has a bracing climate and a good chalybeate spring, with a temperature of 50° F., 28 cubic inches of carbonic acid, and a trace of arsenic. There are also mud-baths and sool-baths.

**DÜRKHEIM** is a celebrated grape-cure station in Bavaria, situated 860 feet high at the foot of the Haardt mountain, and has an equable and mild climate. The waters are weak salt-springs, which are strengthened by the refined sool obtained from the salt-works whenever stronger baths are required. There are traces of iodine and bromine in the waters. There is also a whey-cure establishment.

**EICHWALD** is a small village in the forest of Fichtelgebirge, not far from Teplitz, and celebrated as a health resort in lung diseases.

**EILSEN**, in Lippe-Schomburg, 275 feet high, is a small spa situated in a beautifully timbered valley, but not much frequented. Its waters are strong sulphurous, containing sulphuretted hydrogen, sulphate of lime, carbonate of magnesia, carbonate of oxide of iron, silicate of soda and carbonic acid, and having a temperature of 54.5° F. There are inhalation rooms, moor-baths, mud-baths, and ordinary baths.

**ELMEN**, a Prussian sool-bath spa, near Magde-

burg, is of great local celebrity, its waters containing a large quantity of chlorine compounds, besides some bromine.

ELSTER, a small Saxon bath, lies in a pleasant valley, 1,460 feet high, between Plauen and Franzensbad, not far from the Bohemian frontier, and has a mild and invigorating climate. The waters are alkaline-saline and somewhat similar to those of Franzensbad, but contain a larger quantity of iron. The "Königsbrunnen" is richest in carbonic acid, and very little poorer in sulphate of soda and chloride of sodium than the "Marienbrunnen," which is very rich in sulphate of soda, but ranks third in regard to its quantity of carbonic acid. The "Moritzbrunnen" contains most carbonic acid, but is very poor in salts. The "Albertsbrunnen" contains the least quantity of carbonic acid as well as salts, with the exception of sulphate of soda, in which it is the richest of all, except the "Salzquelle," which contains no iron and has a lower temperature than the other four, the temperature of all of which is 50° F., and the constituents of which are, in various proportions, sulphate of soda, chloride of sodium, bicarbonate of soda, carbonates of lime and protoxide of iron, and carbonic acid. The principal diseases benefited by these waters are catarrh of the stomach and gout. Moor-baths are frequently used, and there is a whey-cure establishment.

Ems is said to be the loveliest spa in Germany,



not in Europe, and is situated in the valley of the Lahn, 291 feet above the level of the sea, and not far from Coblenz, from which it can be reached by rail. It contains the oldest and most famous soda-spring, and its waters (alkaline muriated acidulous) combine a moderate amount of bicarbonate of soda and carbonic acid, with a fair amount of chloride of sodium and small quantities of bicarbonates of lime and magnesia. The temperatures of the various springs vary from  $81.5^{\circ}$  to  $114.8^{\circ}$  F. This is the only soda-water containing common salt that is thermal. The principal springs are the "Kränchen," temp.  $84.2^{\circ}$  F., and the "Kesselbrunnen," temp.  $114.8^{\circ}$  F., both used chiefly for drinking; the "Fürstenbrunnen," temp.  $95^{\circ}$  F., and the new well, temp.  $117.5$  used principally for baths; and the "Bubenquelle," temp.  $104^{\circ}$  F., used only for uterine douches at a temperature of  $90^{\circ}$ . This latter had, until quite lately, a great reputation as being a universal remedy for sterility. The Ems waters are principally used in bronchial and laryngeal catarrh, gout, catarrh of the stomach, chronic dyspepsia, and diarrhoea, dysentery, leucorrhoea, and sterility. There are milk and whey-cure establishments here, carbonic acid gas inhalation-rooms, and public-rooms magnificently appointed, with every possible amusement and delightful society. On the whole, it is one of the most delightful, and amongst women the most popular spa in Europe.

FACHINGEN is, next to Bilin, the strongest soda-spring in Germany, and is situated in the Lahn Valley, its waters containing five grains of bi-carbonate of soda, and 0.08 grains of bi-carbonate of protoxide of iron less than the waters of Bilin. The temperature is 50° F., and the principal diseases treated by the waters, which are exported only, are catarrh of the bladder, gout, and gravel.

FLINSBERG, in Silesia, lies at an elevation of 1,550 feet, has a fresh climate, and pure, but weak, chalybeate waters.

FRANKENHAUSEN, near the Hartz mountains, is a quiet little soda-bath, much used by the Schwartzburg people.

FRANZENSBAD is a cold alkaline saline spa of great celebrity, although situated in such an unromantic spot, close to the dull town of Eger, in Bohemia. It lies at a height of 1,800 feet above sea-level, on an ugly moor, and possesses a fresh climate, and a plentiful supply of springs, which are sometimes called acidulated alkaline-saline chalybeates, and differ only from the bitter-water springs in not containing any sulphate of magnesia. The principal springs are the "Louisenquelle," exclusively used for baths, the "Wiesenquelle," the "Sprudel," the "Salzquelle," and the "Franzensquelle," and they contain, in various proportions, the following salts: sulphate of soda, chloride of sodium, bicarbonates of soda ar

lime, and carbonate of protoxide of iron, with a plentiful supply of carbonic acid, and a temperature of about 50° F. The diseases principally treated are anæmia and chlorosis, female affections, and obstinate constipation. There are very excellent moor-baths, which are much used.

FREIENWALDE, on the Oder, is a very good chalybeate spa, much frequented by Berlin people. Anæmia is said to be quickly cured by a course of these waters.

FRIEDRICHSHALL, near Coburg, in Saxe-Meiningen, is one of the best bitter-water springs in Europe, containing, in sixteen ounces, the following proportion of salts : sulphate of soda, 46 grains ; sulphate of potash, 1·5 ; sulphate of lime, 10 ; sulphate of magnesia, 39 ; chloride of sodium, 61 ; and chloride of magnesium, 30 ; with nine cubic inches of carbonic acid. These waters are not drunk at the spring, but are largely exported, and used in cases of habitual constipation with very good effect.

FÜRED is a very popular Hungarian bath, situated on the Platten See, a large saline lake, and possessing cold alkaline-saline waters, with a small quantity of iron and a large quantity of carbonic acid. The season is from May to September, and skin diseases are chiefly dealt with.

GASTEIN, one of the oldest and most important indifferent thermal spas in Europe, is situated 3,320

feet above sea-level, not far from Salzburg, and surrounded by magnificent alpine scenery. The climate is somewhat indifferent, owing to the heavy rainfall in June, July, and August, which often reaches twenty-two inches; the mean temperature in the same months is about  $56^{\circ}$  or  $57^{\circ}$ , and, except in the season, the cold is often excessive. Nevertheless, the high elevation of the place is most beneficial to many forms of disease, especially to irritable and weak constitutions. The bath arrangements are excellent, but it is not always easy to procure apartments, owing to the scanty lodging and hotel accommodation. There is, however, always plenty of room at Hof Gastein, a place about 600 feet lower down the mountain, to which the Gastein water is conducted in pipes, being then of the temperature of  $95^{\circ}$  F. The waters at Gastein vary in temperature from  $96.8^{\circ}$  to  $114.8^{\circ}$  F. in the springs, and from  $95^{\circ}$  to  $99.5^{\circ}$  F. in the baths. The diseases most benefited here are tabes dorsalis and impotence, also hysteria and hypochondriasis.

GEILNAU is a small alkaline spa, near Nassau. The waters are pure, but weak and cold.

GISSHÜBEL is a small alkaline spa, near Karlsbad, having very similar waters to those at Geilnau.

GLEICHENBERG is an alkaline muriated acidulous spa, situated about seven miles from Grätz, in Styria, 872 feet above sea-level, and has a very mild

climate. The principal springs are the "Constantius," the "Emma," and the "Klausner," all having an abundant supply of carbonic acid, and a temperature of about 68·5° F.

GOCZALKOURTZ is situated 800 feet above sea-level, in Silesia, and possesses salt-springs of great renown in the neighbourhood.

GODESBERG is a small chalybeate spa near Bonn, on the Rhine, where there is an excellent hydropathic establishment. The country round about is charming.

GRIESBACH is a small chalybeate spa in the Black Forest, 1,614 feet high, possessing waters with a temperature of 50° F.

HALL, in Austria, lies 1,064 feet above the level of the sea, about eight miles from Steyer, a small station on the branch line from Linz to Rottenmann, amongst the mountains, and possesses strong salt waters, with a quantity of iodine and bromine which have a great reputation for curing goitre, having been called "Kröpfwasser" for many years. The quantity of common salt contained in 16 ounces of the water is 98·46 grains, whilst in the same amount there are only 7 cubic inches of carbonic acid. The consequence is that vomiting and dyspepsia are often induced by a too free use of the waters.

HALL, in the Tyrol, is situated 1,700 feet above

sea-level, in the valley of the Inn, not far from Innsbrück, and amidst magnificent mountain scenery. It possesses a bath establishment at Heiligen Kreuz, a village close by, where sool-baths may be obtained *ad libitum*.

HARTZBURG (Juliushall) is a salt-water spa on the Hartz Brunswick Railway, 706 feet above sea-level, with a fresh and agreeable climate, a whey-establishment, sool-baths, pine-baths, and good accommodation.

HECHINGEN, in Würtemberg, is a mild sulphur-spring, only used by the inhabitants of the place.

HEILBRUNN, a village in the Bavarian Alps, 2,400 feet high, contains a thermal salt spring with a small quantity of iodine and bromine, known as the "Adelheidsquelle," useful in scrofula. The waters are exported.

HEILBRUNNEN is a small alkaline spa in the valley of the Brohl, on the Rhine, whose waters contain an unusual amount of magnesia, but are only exported.

HEPPINJEN is a small alkaline spa, situated in the valley of the Ahr, on the Rhine.

HOMBURG is a celebrated cold muriated saline spa, situated on the southern declivity of the Taunus, 600 feet above sea-level, and about half an hour's drive by rail from Frankfurt-am-Main. The princi-

pal springs are the "Elisabethenbrunnen" and the "Kaiserbrunnen," which contain more chlorine compounds, carbonic acid, and iron, than the Kissingen waters. There are also the "Luisenbrunnen" and the "Ludwigsbrunnen," containing less chlorides than the stronger springs, and useful in cases of anæmia and cachexia. The "Stahlbrunnen" has a large quantity of iron. The "Elisabethenbrunnen" contains in sixteen ounces 79·154 grains of common salt, 7·756 of chloride of calcium, 7·767 of chloride of magnesium, 0·880 of sulphate of soda, 10·982 of bicarbonate of lime, 0·460 of bicarbonate of protoxide of iron, 2·011 of carbonate of magnesia, and 0,915 of silica. The principal complaints benefitted by a sojourn here are dyspepsia, gastralgia, constipation, liver congestion, anæmia, and cachexia. Baths of all kinds may be had, and also inhalations of carbonic acid. There are excellent hotels in the place; and the bath-establishments, ball-rooms, reading-rooms, &c., are magnificently appointed.

HUBERTUSBAD, in the Hartz mountains, 800 feet above sea-level, is a saline muriated spa, with sool-baths and an agreeable climate.

INSELBAD, near Paderborn, is an earthy spring containing in sixteen ounces 5·901 grains of chloride of sodium, 0·409 grains of sulphate of magnesia, 2,177 of carbonate of lime, 0·028 of carbonate of protoxide of iron, 0·12 cubic inches of carbonic acid, 2·78 of

nitrogen gas, and 0.88 of oxygen gas, and said to be beneficial in cases of spitting of blood. The treatment consists in inhaling the nitrogen gas, taking tepid baths, and drinking the waters.

ISCHL, near Salzburg, in the valley of the Traun, 1,500 feet high, possesses a mild and equable climate, suitable for people with susceptible lungs. There is a fine hydropathic institution hard by, also a good whey-cure establishment, mud-baths, sool-vapour-baths, sool-baths, strong salt-baths, and pine-baths. The waters used for drinking are principally imported from other springs, and it is said that all the European mineral waters may be procured at Ischl. It is a favourite resort of monarchs.

IWONICZ, in Galicia, possesses a spring containing about 50 grains of chlorine combinations, and two others containing waters very similar to those of Kissingen.

JOHANNISBAD, in Bohemia, lies at an elevation of 2,000 feet, and possesses an indifferent thermal spring of 85° F. useful in skin-diseases.

JOHANNISBERG, a lovely little town on the Rhine, below Mainz, possesses a good hydropathic establishment, pine-baths, vapour-baths, grape-cure, &c."

KAINZENBAD lies at an elevation of 2,400 feet, in upper Bavaria, not far from Partenkirchen, and possesses an excellent climate, a strong sulphur



spring, the "Gutiquelle," and an alkaline spring, the "Kainzenquelle," containing in sixteen ounces 8.7 grains of bicarbonate of soda and 1.2 of barègine. The "Gutiquelle" contains 0.835 grains of sulphate of potash, 0.420 of sulphate of soda, 0.189 of chloride of sodium, 8.967 of bicarbonate of soda, 0.092 of silica, and 0.187 (3.9 cubic inches) of sulphuretted hydrogen. There is also an iron spring.

KARLSBAD, in Bohemia, is situated in a narrow valley, 1,200 feet above sea-level, is one of the most celebrated and most frequented thermal spas in Europe, and has a rough and variable climate. The waters are alkaline salines, though many term them indifferent thermals, owing to the small quantity of chlorine contained, and are said to be of great value in a large number of ailments, as, for instance, in gastralgia, catarrh of the stomach, gall-stones, and biliary congestion, liver enlargement, catarrh of bladder, gout, diabetes, and many other diseases. The principal spring is the "Sprudel," which has a temperature of 165°, and flows from amongst the high rugged rocks. The "Muhlbrunnen," with a temperature of 126°, is best borne by the stomach. The "Schlossbrunnen" is the third in repute. There are five other inferior sources, but they differ very little from the three others in their chemical composition. In fact there is so little difference in the fixed component parts of all the sources, that a description of the "Sprudel" will

suffice, which is as follows:—In each sixteen ounces there are 18·21 grains of sulphate of soda, 1·26 of sulphate of potash, 7·91 of chloride of sodium, 10·45 of carbonate of soda, 2·28 of carbonate of lime, 0·95 of carbonate of magnesia, and 0·02 of carbonate of protoxide of iron, with 11·8 cubic inches of carbonic acid. The dose varies from two to ten glasses several times daily, and almost always produces diarrhœa, as is evidenced by the number of places of convenience (*cabinets*) to be found scattered about in the neighbourhood. There are peat-baths in the town which are in great request.

KISSINGEN is situated in the beautiful valley of the Saale, in North Bavaria, 590 feet above sea-level, and is the principal representative of the cold muriated saline springs. The climate is mild and equable, and the arrangements excellent, including a handsome *Kursaal*. The principal springs are the well-known "Ragoczi," the "Pandur," the "Maxbrunnen," and the "Soolsprudel." The "Ragoczi" contains, in sixteen ounces, 44·71 grains of chloride of sodium, 2·20 of chloride of potassium, 0·15 of chloride of lithium, 2·88 of chloride of magnesium, 4·50 of sulphate of magnesia, 2·99 of sulphate of lime, 8·14 of carbonate of lime, and 0·24 of carbonate of protoxide of iron, with 41 cubic inches of carbonic acid, and a temperature of 51° F. The "Pandur" is almost exactly the same, but possesses rather more carbonic acid. The "Maxbrunnen"

is weaker than the other two in common salt and lime, but otherwise similar. The "Soolsprudel" is by far the strongest in common salt and carbonic acid, and is used only for baths. Sool-baths, jet-baths, and wave-baths are in frequent use, and, it may be added, frequent abuse also. Owing to the enormous quantity of carbonic acid contained in this water (80½ cubic inches to the pound) a poisonous effect is often produced unless the temperature of the bath be kept tolerably low (below 77° F.), and thus it is not uncommon to find people taking them at the natural temperature of 68°. The first symptoms produced by using the water at a high temperature are giddiness and dyspnoea, followed quickly by other more alarming symptoms. There is a strong bitter water also at Kissingen, somewhat similar to the Friedrichshall water, prepared from the sool and largely used for drinking. The principal diseases benefited are dyspepsia, liver congestions, gout, rheumatism, anæmia, hysteria, and melancholia.

KÖNIGSWARTH is a small chalybeate spa, situated between Franzensbad and Marienbad, on the southern slope of a mountain, open to the south and south-west, and sheltered from the north, north-east, and north-west winds. It is 2,000 feet above the level of the sea, and its climate is highly beneficial in cases of anæmia, chronic chest affection and incipient phthisis. The waters contain

0.40 grains of bicarbonate of iron and 80 cubic inches of carbonic acid in sixteen ounces.

KÖSEN is a small spa, situated 856 feet high in the valley of the Saale, and is one of the most frequented of the north German sool-baths.

KRANKENHEIL, not far from Tölz and Kreuth, is a small spa whose waters contain a very minute quantity of iodide of sodium.

KREUTH is situated in a sheltered spot on the Alps, not far from the Munich and Salzburg railway, 2,911 feet high, and possesses a remarkably pure and moist atmosphere and two sulphur springs. The stillness of the air renders the place of the greatest value for those suffering from irritability of the respiratory mucous membrane and tendency to bronchitis, but it is not always easy to get beds, owing to the total absence of any house except those connected with the Government *Kurhaus*, which itself has 200 beds only. There is an excellent whey establishment in connection with the *Kurhaus*, and drinking-halls and bathing-rooms supplied by the sulphur springs of the Holy Cross which have a temperature of 51.8° F. There is provided plenty of amusement to while away the time with. In addition to this, sool-baths are provided from the sool of Rosenheim close by.

KREUZNACH is a spa of much celebrity, situated in the Nahe valley, not far from Bingen, on the Rhine

and has a mild climate and iodo-bromated-muriated springs, of great repute in the cure of scrofula. The principal spring is the "Elisenquelle," generally used for drinking, and containing 91 grains of chlorine combinations, three-tenths of a grain of iodine and bromine combinations, and no carbonic acid. The following is the exact analysis of the water:—72·88 grains of chloride of sodium, 18·89 of chloride of calcium, 4·07 of chloride of magnesium, 0·62 of chloride of potassium, 0·61 of chloride of lithium, 0·27 of bromide of magnesium, 0·08 of iodide of magnesium and 1·69 of carbonate of lime. The "Oranienquelle" is used for baths, and contains 108·70 grains of common salt. The baths are taken an hour after drinking the waters, usually at a temperature of 92°, and lasting for twenty minutes at first, and afterwards lengthened in time to nearly an hour. The *Kursaal* and the chief springs are in a nicely wooded island on the river, where soot steam baths may be had, and where the grape cure is extensively practised. The principal diseases treated at Kreuznach are scrofulous swellings and incipient phthisis.

KRONTHAL is a small cold muriated-saline spa, not far from Soden on the Taunus, with a mild climate and a small establishment. The temperature of the two springs is 56·8° and 61·1° F. respectively.

LANDECK, in Silesia, lies in a mountainous district,

1,400 feet above the level of the sea, and possesses thermal indifferent waters, termed by some sulphurous, on account of the small quantity of sulphuretted hydrogen they contain. The temperature is about 67° to 85° F., and the water is usually warmed for bathing. Rheumatism is the complaint generally treated here.

LANGENBRÜCKEN lies in a lovely valley in Baden, between Bruchsal and Heidelberg, 440 feet above the level of the sea, and possesses cold sulphurous springs, which are very rich in carbonic acid. It is a very popular bath, but the accommodation at the *Kurhaus* is very limited. Tub-baths, douches, vapour-baths, vapour-douches, and drop-baths are used, and the cases treated are rheumatism and neuralgia.

LAUBBACH, a small and lovely place, not far from Coblenz, has a fine hydropathic establishment and a very invigorating climate,

LIEBENSTEIN is a small and quiet chalybeate spa, situated on the south-west slope of the Thuringian Forest, in Saxe-Meiningen, 1,000 feet above sea-level, and possessing a good hydropathic establishment, a whey-cure establishment, and two good springs, the principal one a pure and strong chalybeate, the other one an acidulated saline spring. Pine-leaf baths and salt-baths are used constantly, and the place is well-patronised by North-Gerr

LIEBENZELL is situated 1,000 feet above the level of the sea, in the Black Forest, about eight miles from Wildbad, and possesses indifferent thermal springs with a small quantity of iron. Anæmia is the complaint treated here.

LIPPSPRINGE is situated five miles from Paderborn, in Westphalia, about 440 feet above sea-level, on a chalk and sand-foundation, and has a great reputation in cases of phthisis, and an equable though moist climate. There are also very good earthy springs, containing in sixteen ounces 1·888 grains of chloride of sodium, 5·463 of sulphate of soda, 2·875 of sulphate of magnesia, 2·223 of sulphate of lime, 5·2 of carbonate of lime, 0·1 of carbonate of protoxide of iron, 5 cubic inches of carbonic acid, 1·4 of nitrogen gas, and 0·17 of oxygen gas. Two or three glasses of the water are usually taken each morning, and baths and inhalations of nitrogen are employed in cases of phthisis and struma.

LOBENSTEIN, in Reuss, possesses a good chalybeate spring of some repute in the district.

LUHATSCHOWITZ is situated on the North-Austrian railway, a few miles from Hradisch, in a pleasant valley of the Carpathian mountains, about 1,700 feet above the level of the sea, and possesses alkaline muriated acidulous waters about as strong as any in Europe. There are four springs that are generally used for drinking, and these are cold, and

contain in sixteen ounces from 38 to 61 grains of bicarbonate of soda, about 4 of carbonate of lime, less than a grain of carbonate of protoxide of iron, of iodide of sodium, and of bromide of sodium; about a grain of chloride of potassium, from 23 to 33 grains of chloride of sodium, and from 14 to 50 cubic inches of carbonic acid. The complaints treated are gout and catarrhs.

MALMEDY, a small German village not far from Spa, has several good chalybeate wells.

MARIENBAD, in Bohemia, is situated 1,912 feet above sea-level, in a lovely well-timbered valley, and is the chief cold alkaline saline spa, its waters containing more carbonic acid than the other wells of this class, and double the quantity of purgative salts and considerably more iron than the Karlsbad waters. The springs most used are the "Kreuzbrunnen" and the "Ferdinandsbrunnen," the former containing in 16 ounces 38·04 grains of sulphate of soda, 0·4 of sulphate of potash, 13·06 of chloride of sodium, 9·02 of carbonate of soda, 3·99 of carbonate of lime, 3·33 of carbonate of magnesia, 0·27 of carbonate of protoxide of iron, and 15 cubic inches of carbonic acid; and the latter being almost the same, but possessing rather more carbonic acid and chloride of sodium. The "Kronprinz-Rudolfsquelle" is another and much weaker source, but having the same temperature as the two for



ones (48.2° F). The "Waldquelle" is similar to it. The "Wiesenquelle" is a mild earthy spring, very useful in urinary affections. The "Carolinenquelle" and the "Ambrosiusquelle" are acidulated non-purgative chalybeate sources. There are peat-baths of great renown, and ordinary baths; and the arrangements, though limited, are thorough.

**MEHADIA**, in the Banat, near Orsova, is the celebrated thermal sulphur spa, known to the Romans, and called the baths of Hercules. It is one of the most popular of the Hungarian spas, lies in a romantic valley of the Carpathians, and has a mild and equable climate. The waters are similar to those at Aachen, and have a temperature of 86° to 131° F. The cases cured are gout, rheumatism, and scrofula.

**MEINBERG**, in Lippe-Detmold, is a weak sulphur-bath, where sulphur mud-baths are used. There are also a chalybeate spring, rich in carbonic acid, a salt-spring, and a carbonic acid and pneumatic apparatus.

**MERAN**, in the Tyrol, lies in splendid scenery, 900 feet high, is protected from all but the south winds, and has a dry atmosphere with little rain. There are whey cures, goat's milk cures, herb cures, grape cures, and baths of various descriptions.

**MERGENTHEIN**, in Würtemberg, is situated 590 feet above sea-level, in the valley of the Tauber, and has

a good bitter-water spring, containing in sixteen ounces 51.26 grains of chloride of sodium, 21.89 of sulphate of soda, 15.88 of sulphate of magnesia, 9.86 of sulphate of lime, 5.45 of carbonate of lime, 1.40 of carbonate of magnesia, 0.05 of carbonate of protoxide of iron, and 18 cubic inches of carbonic acid, and having a temperature of 51.8° F.

**MÜNSTER-AM-STEIN** is an iodo-bromated brine, near to Kreuznach, having a higher temperature than the Rehme and Nauheim waters. In sixteen ounces there are 60,998 grains of common salt and 11,083 of chloride of calcium.

**NASSAU**, near Ems, on the river Lahn, has a fine hydropathic institution and a good climate.

**NAUHEIM**, a modern spa on the railway between Frankfurt-am-Main and Giessen, usually termed a muriated saline spa, contains so much common salt as to place it amongst the strong brines, although possessing two drinkable springs. It is situated 450 feet above the level of the sea, having a mild climate, and very good accommodation for visitors. The temperature of the waters varies from 83° to 100°. The strongest spring is the "Grosser Sprudel," which throws up its water about nine feet high, and contains as much as 265.4 grains of common salt in 16 ounces. The "Kurbrunnen," one of the drinking wells, contains in 16 ounces 109.923 grains of common salt, and the "Salzbrunnen," the other

drinking well, 141·822 grains. There are gaseous thermal sool-baths and ordinary baths always to be obtained.

NENNDORF, in Hesse, is pleasantly situated, and possesses good cold sulphur springs, with inhalation-rooms, mud-baths, moor-baths, sool-baths, and whey cures.

NEUENAHR, a pleasant spa, in the valley of the Ahr, between Coblenz and Bonn, lies 276 feet above sea-level, and possesses a cold weak alkaline and four thermal alkaline springs. The temperature of the waters varies from 72° to 105° F., and the same kind of complaints are treated here as at Vichy.

NEUHAUS, a Styrian spa, is situated 1,200 feet above sea-level, and possesses indifferent thermal springs and good whey establishments. There are also salt springs and sool-baths. The "Elisabethquelle" is said to be somewhat similar in saline ingredients to the waters of Kissingen.

NIEDERBRONN, near Strassburg. has cold salt springs, which have no great celebrity.

NIEDERLANGENAU lies 1,187 feet above sea-level, in a lovely valley, in Glatz, and possesses a pure chalybeate, of great repute in anæmia and nervous affections.

OFEN, a suburb of Buda, on the Danube, is a very old spa, its waters having been known to the

**Romans.** There are four sulphur wells, varying in temperature from  $110^{\circ}$  to  $140^{\circ}$ , but none having very much sulphur. The "Kaiserbad" is the best sulphur-bath, and is splendidly fitted up. What makes Ofen so famous now-a-days, however, is the fact that the most widely known bitter-water, "Hunyadi-Janos," emanates from there. This water contains in 16 ounces 800 grains of solids, including 138 of sulphate of magnesia, 129 of sulphate of soda, 11 of chloride of sodium, and 13 of carbonate of soda, and is principally exported for use in chronic constipation, &c. "Æsculap" is another of the Ofner bitter-waters, and contains rather more sulphate of magnesia than the "Hunyadi-Janos," rather less of sulphate of soda, two-thirds less of common salt, and very much more of carbonate of soda. The "Victoria" bitter-water, also from Ofen, is said to contain more of the sulphates of magnesia and soda than any of the others.

**PEJO**, near Trent, in the Tyrol, has one of the purest and best chalybeates in Europe, with a plentiful supply of carbonic acid. It lies at an elevation of 1,900 feet, and is a favourite resort of the Italians.

**PETERSTHAL**, in the Black Forest, lies 1,335 feet high, and possesses good chalybeate waters, with a large supply of carbonic acid.

**PFÄFFERS**, lies 2,180 feet above the level of the sea,

close to the Rhine, and possesses indifferent thermal waters, which are taken to Ragatz for use, 500 feet lower down and much more favourably situated.

PÜLLNA, in Bohemia, is one of the best known bitter-water springs, whose waters are principally exported. They contain in 16 ounces 123·8 grains of sulphate of soda, 4·8 of sulphate of potash, 2·6 of sulphate of lime, 98 of sulphate of magnesia, 16 of chloride of sodium, 6·4 of carbonate of magnesia, and 6·9 cubic inches of carbonic acid. They are used in cases of obstinate constipation and liver congestion.

PYRMONT is one of the strongest of the chalybeate spas, and is situated 404 feet above the level of the sea, not far from Rehme. The iron waters contain in 16 ounces 0·57 grains of bicarbonate of protoxide of iron, 10·47 of bicarbonate of lime, 8·88 of sulphate of magnesia, 9·05 of sulphate of lime, and 29 cubic inches of carbonic acid, and have a temperature of 55·8° F. Beside the iron waters there are also good salt springs, containing in 16 ounces 54 grains of chloride of sodium, 10 of carbonate of lime, 7 of sulphate of magnesia, 6 of sulphate of lime, and 23 cubic inches of carbonic acid, and having a temperature of 50° F. These waters are considered about equal to those of Kissingen in amount of salt contained, and are used for similar ailments. The iron waters are used in cases of anæmia, chlorosis, and debility.

There are excellent arrangements, a beautiful park, and all kinds of baths.

RABBI, in the Tyrol, lies 2,000 feet above sea-level, and possesses good iron waters, and every variety of baths and douches.

RAGATZ lies near the Swiss frontier, about 1,750 feet above the level of the sea, not far from the Rhine, and is supplied with the thermal indifferent waters of Pfäfers, which have a temperature of  $100\cdot4^{\circ}$  at Pfäfers, and of  $96^{\circ}$  F. at Ragatz. There are excellent arrangements, including new swimming-baths, which are connected with the splendid new hotel, Neuralgia and affections of the nervous system are the complaints principally treated.

REHME (Oeynhausén) is situated in Westphalia, in a lovely valley, 134 feet above sea-level, and possesses very strong thermal brine waters, besides a weak salt spring, and a weak bitter-water spring. The brine spring contains in 16 ounces 240 grains of chloride of sodium, 9 of chloride of magnesium, 22·6 of sulphate of lime, 25·1 of sulphate of soda, 1·8 of carbonate of magnesia, 8·4 of carbonate of lime, 0·8 of carbonate of protoxide of iron. These waters cannot be drunk, but are used regularly as thermal sool-baths, for which they have a great reputation. There are also simple sool-baths supplied by the graduated sool of the salt works; sool-spray-baths taken in a beautiful dome-shaped building, where is

also an inhalation apartment, supplied with a warm atmosphere of 66° to 86° F., saturated with salt vapour and carbonic acid; wave-baths; and carbonic acid gas-baths. The drinking waters are the "Bülow" weak sool source, and the mild bitter-water source, also containing common salt. The complaints treated are bronchial affections, oozæna, catarrh of the throat and ear, atonic ulcers, and debility.

REICHENHALL is situated 1,407 feet above the level of the sea, not far from Munich and Salzburg, and possesses salt springs, milk and whey cures, sool-spray-baths, sool-baths, and an inhaling-room.

REINERZ, a small spa in Galatia, near Glatz, lies at an elevation of 1,750 feet, and possesses several alkaline and two chalybeate springs, mud-baths, iron-baths, and a whey-cure establishment. It has a celebrity for curing chest affections. The climate is rather rough.

REUTLINGEN, in Würtemberg, possesses weak sulphur wells of some repute locally.

RIPPOLDSAU is an old-fashioned Bavarian spa, 1,886 feet above the level of the sea, in a narrow valley, surrounded by pine forests. The waters are chalybeate, with a large amount of bicarbonate of lime. There are pine-baths, and every convenience to be obtained, together with perfect quiet and repose.

ROHITSCH, a Styrian spa, not far from Cilli, 780

feet above sea-level, possesses valuable alkaline-saline springs, the waters of which are mostly exported. The "Tempelbrunnen" is the principal source, and contains 15 grains of Glauber's salt, 0·7 of common salt, 8 of bicarbonate of soda, 11 of carbonate of lime, 10 of carbonate of magnesia, and 0·09 of carbonate of the protoxide of iron, with 25 cubic inches of carbonic acid. The temperature is 50° F. It is very suitable for cases of dyspepsia, and acidity of the stomach.

ROISDORF is a small Rhenish spa, from which are exported alkaline muriated acidulous table waters.

ROLANDSECK, a small Rhenish town, possesses a good hydropathic institution, and a delightful climate.

RÖMERRAD, a Styrian spa, near Cilli, 755 feet above sea-level, has an excellent climate and indifferent thermal waters, of a temperature of 95°, which are very useful in cases of hysteria, and chronic uterine affections.

ROSENHEIM, in the valley of the Inn, 1,856 feet above sea-level, possesses a good sool-bath, supplied from the salt works at Reichenhall, and a good sulphur well. The sool-bath is principally used to supply the Kreuth bath with.

SAIDSCHUTZ, in Bohemia, is one of the bitter-water spas. The following is the analysis. In 16 ounces there are 46 grains of sulphate of soda, 4 of sulphate



of potash, 10 of sulphate of lime, 84 of sulphate of magnesia, 25 of nitrate of magnesia, 2 of chloride of sodium, 5 of carbonate of magnesia, and no carbonic acid. The waters are exported.

SALZBRUNN lies at a height of 1,230 feet, in a wooded valley of Upper Silesia, not far from Freiburg, and is called the cold Ems, on account of the supposed similarity of the two waters; but the fact is that whilst the Ems water contains such an appreciable amount of common salt as to cause it to be ranked amongst the alkaline muriated acidulous waters, the water of Salzbrunn has scarcely any common salt, and cannot be considered as belonging to any but the simple alkaline waters.

SALZHAUSEN, near Nidda, lies at an elevation of 460 feet, and is a cheap sool-bath.

SALZUNGEN, in the Werra valley, 780 feet high, in Saxe-Meiningen, has good sool-baths and capital arrangements. The climate is very good.

SCHLANGENBAD, near Wiesbaden, is one of the chief of the indifferent thermal spas, and is situated in a beautiful valley of the Taunus, 900 feet above the level of the sea, with a mild, bracing, and equable climate. The temperature of the waters is only 86° F., and therefore they cannot be considered very warm. Nervous ailments are benefited by a residence at this quiet and bracing spa. There are milk and whey cures also.

SCHMALKALDEN is situated 1,000 feet above the level of the sea, in the Thuringian forest, and possesses a salt spring and sool-baths.

SCHWALBACH, one of the most popular chalybeate spas in Europe, is situated 900 feet above the level of the sea, in a charming valley of the Taunus not far from Wiesbaden, and possesses iron springs having a temperature of from 47° to 50° F. The three chief sources contain in every 16 ounces the following quantities of bicarbonate of protoxide of iron and carbonic acid—the “Stahlbrunnen,” 0·64 grains and 50 cubic inches; the “Weinbrunnen,” 0·44 grains and 45 cubic inches; and the “Paulinenbrunnen,” 0·51 grains and 40 cubic inches. The baths are famous for stimulating the skin. Anæmia, chlorosis, nervous disorders, and general debility are the principal diseases treated.

SCHWALHEIM is an acidulous alkaline spring near Nauheim, from whence are exported large quantities of table waters.

SEBASTIANSWEILER is a weak sulphur spa in Würtemberg.

SEIDLITZ is a wretched-looking Bohemian village not far from Püllna, possessing several bitter-water springs, which flow into shallow ditches, and are most unpleasant to take, being yellowish-looking, nauseous, bitter, and altogether as unlike the seidlitz

powders one gets from an English chemist's shop as chalk is unlike cheese. In 16 ounces of the water there are 104 grains of sulphate of magnesia, 8 of sulphate of lime, 8 of carbonate of lime, 8 of chloride of sodium, 8 of carbonate of magnesia, and  $3\frac{1}{2}$  cubic inches of carbonic acid. The waters are seldom taken, and now very rarely exported.

SELTERS (or SELTZERS), in Nassau, not far from the Rhine, is celebrated for its alkaline muriated acidulous table-waters, which are extensively exported, and contain in 16 ounces 9·7 grains of bicarbonate of soda, 2·6 of bicarbonate of lime, 2·5 of bicarbonate of magnesia, 0·1 of bicarbonate of the protoxide of iron, 17 of chloride of sodium, and 80 cubic inches of carbonic acid.

SODEN, on the Taunus, in Nassau, possesses twenty-three muriated saline sources, which have a great reputation in cases of chronic catarrh and tendency to phthisis. The "Milchbrunnen" contains in 16 ounces 18·62 grains of common salt and 81 cubic inches of carbonic acid, and has a temperature of 76° F. All the others have a slightly lower temperature, and some rather more and others rather less carbonic acid. In common salt they are all more or less rich—the "Warmbrunnen" having 26·81 grains, the "Schwefelbrunnen" 77·86, the "Wiesensbrunnen" 94·55, the "Wilhelmsbrunnen" 104·10, and the "Soolbrunnen" 109·80. There is a new

bathing establishment, with sool-baths, &c., and every comfort and convenience.

SODEN, near Aschaffenburg, on the Main, is situated 440 feet above sea-level, in a sheltered and pretty spot, with a delightful climate, and two cold muriated saline springs, one strong one, containing 161 grains of chlorides to the 16 ounces, and a weaker one with only 40 grains of common salt.

STUBNYA, in Hungary, possesses an alkaline saline spring, with a temperature of 112° F., and an indifferent thermal spring.

SUDERODE is a small and cheap sool-bath on the Hartz mountains, 550 feet above the level of the sea.

SULZA is a small and cheap sool-bath in Weimar, 380 feet above the level of the sea.

TEINACH, in Würtemberg, is situated not far from Caln, in a lovely valley of the Black Forest, 1,225 feet above sea-level, and possesses a weak alkaline acidulous and a good chalybeate spring. There is a hydropathic institution.

TEPLITZ, in Bohemia, 648 feet above the level of the sea, is one of the most frequented baths in Europe, and the type of indifferent thermal spas. Here peat-baths and ordinary baths are taken at a very high temperature, sometimes as high as 109° F., and in this lies the value of the treatment according

to the recognised orthodoxy of the place. It is very questionable, however, whether this very high temperature is as necessary as it is believed to be. The natural temperature of the waters varies from 76° to 120° F. The principal complaints that are benefited by these waters are gout, rheumatism, sciatica, and strumous enlargements, sufferers from these maladies usually taking up their residence at the pretty suburb of Schönau, the old town of Teplitz being, as a rule, overcrowded and close. There is accommodation at the two places for 4,000 baths daily.

TÖNNISSTEIN is a small cold alkaline acidulous spa, near Brohl, on the Rhine, from whence is exported a large quantity of the water annually.

WARMBRUNN, a Silesian spa, situated 1,100 feet above sea-level, in the Hirschberg valley of the Riesengebirge, is a well-known indifferent thermal source, whose waters have a temperature of 95° to 105°, and are used for the baths at 87° to 100° F.

WASSENACH is a small chalybeate spring near Tönnisstein, in the Brohl valley.

WEILBACH, in the valley of the Main in Nassau, possesses cold sulphurous springs much used for drinking, and sometimes for baths. There is a bath-house, which is not very tempting. The waters are principally exported.

WIESBADEN is one of the most popular baths in

Europe, and is visited by enormous numbers of people annually. It is the capital town of Nassau, and lies in a valley of the Taunus, not far from Mainz and Frankfurt-am-Main. There are twenty-two thermal muriated saline springs, the principal one, the "Kochbrunnen," having a temperature of 155° F., and containing in 16 ounces 52.49 grains of common salt, 1.12 of chloride of potassium, 0.001 of chloride of lithium, 8.61 of chloride of calcium, 1.56 of chloride of magnesium, 0.02 of bromide of magnesium, 0.69 of sulphate of lime, 8.21 of carbonate of lime, 0.04 of carbonate of protoxide of iron, and 6½ cubic inches of carbonic acid. The waters are very useful in indigestion, atonic gout, enlarged liver, and chronic diarrhoea. There is a handsome *kursaal*, a good conversation house, a large number of first-class hotels, each with baths of all kinds, and a select and large company. The surrounding country is exquisitely lovely, especially on the Rhine side, and this makes the spa very attractive and enjoyable.

WILDBAD, a Württemberg spa, situated 1,880 feet high, in the Black Forest, is one of the best known of the German indifferent thermal spas. The baths vary from 98° to 103° F., and the arrangements are perfect. Gout, paralysis, ankylosis, and rheumatism are the complaints most benefited by the waters.

WILDUNGEN, a Waldeck spa, is situated 740 feet

above the level of the sea, not far from Wabern, and possesses, besides a very good chalybeate spring, a number of earthy springs, which are very unfortunately scattered about the place, some of them at considerable distances away. The "Stadtbrunnen" contains in 16 ounces 5·471 grains of bicarbonate of lime, 4·118 of bicarbonate of magnesia, and 0·161 of bicarbonate of protoxide of iron, and has a temperature of 50° F. The "Salzbrunnen" or "Helenenquelle" contains 9·753 grains of bicarbonate of lime, 10·474 of bicarbonate of magnesia, and 0·143 of bicarbonate of protoxide of iron, and has a temperature of 52° F. The "Stahlbrunnen" is one of the best chalybeates in Europe, having only 3·1 of solid constituents, and out of these ·55 of bicarbonate of protoxide of iron. There is a very good *kurhaus*, with beautiful grounds, and there are good hotels. Affections of the bladder, kidneys, and nervous system are treated here.

WITTEKIND is a very cheap and equally good sool-bath in the valley of the Saale, 300 feet above the level of the sea, and close to the university of Halle.

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## CHAPTER VII.

## SWISS HEALTH RESORTS AND SPAS.

SWITZERLAND has a climate which is almost indescribable, owing to its remarkably uneven surface, which consists for the most part of lofty mountains and deep valleys. Not only does this condition diversify the climate, but it also tends to make it extremely variable even in the same localities, so that days of almost insupportable heat are not unfrequently preceded by very cold mornings and succeeded by equally cold evenings. These sudden changes are very dangerous to health, and it behoves visitors to Switzerland to be on their guard against them, or the consequences may be serious. It seems scarcely necessary to point out that the temperature on the mountains is widely different from that in the valleys at the same season, and that, while winter reigns in all its rigour on the lofty summits of the mountain ranges, spring is



frequently far advanced in the valleys beneath. In fact, it may truly be said that each place in Switzerland has a climate of its own, and therefore I shall proceed at once to the description of the different health resorts and spas in alphabetical order.

**ALISBRUNNEN**, near Hausen, in Canton Zürich, is situated 1,955 feet above the level of the sea, and has a bracing climate, a good hydropathic establishment, and a whey-cure establishment.

**ALVENEU** is a small sulphur spa on the road from Chur to St. Moritz, through the Albula pass. It is situated 2,480 feet high, and has a good and bracing climate and a comfortable bath establishment.

**BADEN**, near Brugg, on the Zürich railway, is a very old and popular bath, situated 1,180 feet above sea-level, in the Limmat valley, and possesses numerous springs, which by some are termed thermal sulphurous, and by others thermal indifferent, and do not appear to have any very great curative properties. The bath arrangements are excellent, the water abundant with a temperature of 117° to 122° F., and the surrounding country very beautiful. The climate is mild, living cheap, and the town old-fashioned and dull.

**BIRMENS DORF**, on the road from Zürich to Bremgarten, is a bitter-water spa, its springs containing 54 grains of sulphate of soda and 169 of sulphate of magnesia in the pint.

DAVOS-AM-PLATZ and DAVOS DOIFLI, two very celebrated health resorts, about two miles from each other, in a valley of the Grisons, 4,805 feet high, are in high repute as residences for consumptives. There are now a number of good hotels and *pensions* at both places, and efforts have been made to remedy the defective sanitary arrangements. The climate in winter appears to be very dry and equable, and people habitually sit out of doors on cold days with the thermometer at 20° or 25° F. in the shade, with no more protection than their indoor clothing, except a pair of dark spectacles to neutralise the glare of the snow. This is not to be wondered at when we recollect that 20 F. in a dry atmosphere produces no more sensation of cold than 40° F. in a moist one. Moreover, the variations at a low temperature, with still, dry air, are not felt like the variations at a higher temperature with air containing more watery vapour. A temperature of 32° F. (freezing point) in England is, on account of the dampness of the air, much more severely felt than the still, dry atmosphere of an alpine summit with the thermometer 15 or 20 degrees lower. This it is that makes Davos so valuable. During the five winter months (150 days) there are usually from sixty to ninety clear days, on which people may sit out of doors in the sun and have the full benefit of the dry and bracing mountain air, provided the Föhn is not blowing, which is the dreaded south-

wind so often accompanied by a sudden change of weather. This wind is very hot and causes a sudden melting of the snow and moistening of the atmosphere, and sometimes floods the country with rain and melted snow. It is, however, never much felt at Davos, on account of its high elevation, the nearest Föhn station, where the full effect of the wind is felt, being Klosters, which is 1,700 feet lower down the mountain. Yet, when it does blow, however slightly it may be felt at Davos, the winter is spoiled for consumptives.

ENGELBERG, in Canton Unterwalden, is situated at a height of 3,180 feet, and has a still air, with an average of twenty-two rainy days in three summer months. There is a hydropathic establishment in the place.

FIDERIS is not far from Davos Platz, although much lower down, being only 6,200 feet above sea-level, and possesses weak alkaline waters, with a small establishment, and a reputation for curing anæmic children.

GURNIGEL, a small spa, situated about midway between Thun and Freyburg, at an elevation of 3,550 feet, possesses sulphur and chalybeate springs, with a good establishment, and has a reputation for benefiting hypochondriacs and dyspeptics.

HEIDEN, near St. Gall and close to Lake Constance, is situated at an elevation of 2,660 feet, and

has a hydropathic and a whey establishment. It is celebrated as a health resort in phthisis.

HEUSTRICH is situated in a valley not far from Thun, at an elevation of 2,000 feet, and has a sulphur bath and very comfortable arrangements.

INTERLACHEN, on the well-known tourist route, between the lakes of Thun and Brienz, is celebrated for its hydropathic establishment and whey and fruit cures.

LEUKERBAD (or Loèche-les-bains) is situated 4,670 feet high, on the road from Sion to the Gemmi Pass. It often goes by the name of Leuk, but in reality Leukerbad (the baths of Leuk), is some little distance from the town. The waters are earthy and have a very high temperature, some of them being 102° F., and others as much as 122° F. The principal spring, the "Lorenz," contains in 16 ounces, about 10½ grains of sulphate of lime and 2½ of sulphate of magnesia, with a little carbonic acid. The mode of bathing at this spa is somewhat peculiar, and has contributed to a great extent in making the place celebrated. The course consists of two baths each day for twenty-five days, the duration of each bath being from half an hour to several hours; and gentlemen and ladies bathe together in baths holding about a score of people, and pass the time away in chatting, reading, taking luncheon, and playing dominoes on floating boards,

their attire consisting of woollen capes and skirts. The diseases thus treated are gout, rheumatism, struma, scaly eruptions of the skin, and prurigo, and it is said that the benefit derived from this mode of treatment is enormous.

**MONTREUX** is situated on the eastern shore of the Lake of Geneva, at a height of 1,186 feet above the level of the sea, and is celebrated as a health resort in some forms of phthisis. The average winter temperature is 40·55° F., and the number of rainy days in the year is sixty, and in the winter twenty-one. There are numerous cheap and well-appointed boarding-houses, but the promenades are few and poor, and the changes in temperature sometimes very great and sudden. There is a good grape-cure establishment in the place.

**MÜRREN**, a small health resort, near Lauterbrunnen, on the slope of the Jung Frau, lies at an elevation of 5,000 feet, and is very popular with the Swiss.

**RHEINFELD**, near Bâle, is a tolerably good salt bath.

**RIGI-KALTRAD**, near Zermatt, has a good hydro-pathic establishment, is situated 4,480 feet above sea-level, and is a celebrated health resort.

**RIGI-SCHIEDER**, not far from Interlachen, lies at an elevation of 5,000 feet, and is a well-known health resort, although very unsuitable for many cases of phthisis.

**SAN BERNARDINO** lies at a height of 5,000 feet, on

the road from Splügen to Bellinzona, and has an excellent climate and a very good carbonated spring, with a little sulphate of magnesia and a rather large quantity of lime.

St. MORITZ is a very popular bath, situated 6,000 feet above the level of the sea, in a beautiful alpine valley of the Upper Engadin, about eleven hours' drive by diligence from the railway station of Chur (Coire), and has an enormous reputation as a winter health station for consumptives. The climate is most refreshing and very dry, mists being almost unknown, and the midsummer days being similar to the May-days in Central Germany. The winter is severe but so dry as to be but little felt, and the ground freezes five or six feet deep. The climate is very similar to that of Davos, in the Grisons close by, though rather colder owing to its higher elevation, and with about an hour's more sun each winter day. The average temperatures at 7 o'clock in the morning, 1 o'clock in the afternoon, and 9 o'clock at night, are in June,  $41^{\circ}$ ,  $57.2^{\circ}$ , and  $48.2^{\circ}$  respectively; in July,  $50^{\circ}$ ,  $60.8^{\circ}$ , and  $49.1^{\circ}$ ; in August,  $46.4^{\circ}$ ,  $57.2^{\circ}$ , and  $47^{\circ}$ ; and in September,  $42.4^{\circ}$ ,  $58.6^{\circ}$ , and  $48.2^{\circ}$ . The springs rise in a low, marshy meadow, where is located the bathing establishment, in which are baths, drinking wells, and apartments for visitors. The waters are tolerably strong in iron, very strong in carbonic acid, and are considered to be very pure. The following is the

analysis of the principal source:—Bicarbonate of protoxide of iron, 0·18 grains, bicarbonate of magnesia 0·96, bicarbonate of lime 5·57, bicarbonate of soda 1·46, sulphate of soda 2·09, carbonic acid 81 cubic inches in the pint, with a temperature of 41·6° F. The diseases most benefited by drinking and bathing in the waters are dyspepsia, gravel, gout, and rheumatism. The season for taking the baths is from the middle of June to the middle of September, and for consumptives from the end of September to the end of March.

SAXON, six miles from Martigny by rail, is a very renowned iodo-bromated muriated spa, with a good establishment and concert-room. It is, however, very doubtful whether the waters really contain the amount of iodine and bromine they are said to contain, and some medical men have even gone so far as to say that the springs are regularly tampered with for the purpose of deceiving the public and maintaining the celebrity of the place as an iodo-bromated spa. What truth there is in this assertion I cannot say.

SCHINZNACH, near Baden, 1,080 feet above sea-level, is a well-known thermal sulphur bath, with a temperature of 95° F., and containing in 16 ounces 1·72 cubic inches of sulphuretted hydrogen (more than any of the Pyrenean baths), 2·58 of carbonic acid, 5·486 grains of chloride of potassium, 9·878 of

sulphate of soda, 0.688 of sulphate of potash, 1.206 of sulphate of lime, 1.095 of carbonate of lime, and 0.098 of silicic earth. Skin diseases are very successfully treated here.

STACHELBERG is situated 2,050 feet high in the Lin Valley, not far from the Glarus railway station, and possesses a weak and cold sulphur spring, which is of great benefit to skin diseases. There is a whey-cure establishment also.

TARASP (Tarasp-Schuls), in the Lower Engadin, is situated 4,000 feet above the level of the sea, and has a much milder climate than the Upper Engadin, the average temperature at 6 o'clock in the morning in July being 50° F., at 2 o'clock in the afternoon 68.5°, and at 9 o'clock at night 54.5°, and the highest midday temperature being 87° F. The principal well, the great or "St. Lucius" spring, contains in 16 ounces 16.547 grains of Glauber's salt, 2.997 of sulphate of lime, 29.400 of common salt, 0.001 of iodide of sodium, 88.842 of bicarbonate of soda, 17.849 of bicarbonate of lime, 7.680 of bicarbonate of magnesia, 0.209 of bicarbonate of protoxide of iron, and 83 cubic inches of carbonic acid, and has a temperature of 44° F. The little or "St. Emerita," spring contains very much the same, but has no iodide of sodium and rather less carbonic acid. All the cases benefited at Marienbad and Carlsbad may be advantageously treated here,



as well as cases of bronchial catarrh and tubercles of the lungs.

VEVEY, on the north side of the lake of Geneva, is a celebrated grape-cure station.

WEISSBAD is situated 2,820 feet above sea-level, and is a well-known health resort and whey-cure station.

WEISSENBURG, three miles from Thun, in a deep ravine, lies 2,758 feet above sea-level, and possesses thermal earthy waters, very similar to those of Leukerbad, but with twice as much sulphate of magnesia. The temperature is 75° F., and the waters are very famous in cases of bronchial catarrh and phthisis.

WILDEGG is a common salt bath containing a small quantity of iodine. The water is hard to digest, and is not of very great repute for drinking. There is a good sool-bath, which is used freely.

WYH is a very pure chalybeate spa, not far from Tarasp in the Lower Engadin.

ZERMATT is a very salubrious health resort on the Matterhorn, not far from Sion railway station.

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## CHAPTER VIII.

## ITALIAN HEALTH RESORTS AND SPAS.

IN describing the climate of Italy, Sicily, and Sardinia, it will be necessary to give a brief sketch of the mountain ranges, showing the direction in which they run, and the protection they afford from the various strong winds. The three provinces of Piedmont, Lombardy, and Venice, form the northern expanded portion of the kingdom of Italy, and are completely separated from France, Switzerland, and Austria, by the chain of the Alps, which stretches from the shores of the Gulf of Genoa in a semi-circular form to the Austrian province of Trieste. This mountain-barrier acts as a protection from the north winds, and consequently makes the climate of the Italian places to the immediate south exceedingly mild. Towards the eastern extremity of the range, not only is there complete protection from the north winds, but also from the severe east winds,

which make such havoc along the eastern shore of the peninsula during the winter and spring. At the western extremity we find the maritime Alps becoming continuous, near the northern shore of the Gulf of Genoa, with the Appennine chain, which runs in a south-easterly direction down the centre of the peninsula as far as its centre, where it breaks up into a number of smaller chains running in different directions. This chain of the Appennines is called the backbone of the peninsula, and divides the country into two lateral portions—the eastern, which is open to the north and east, and has an extreme climate, cold in winter and hot in summer; and the western, which is protected from the north and east by the range of mountains, and enjoys an equable and mild climate, being cooler in summer than the eastern portion, and considerably warmer in winter. That part lying immediately to the south of the junction of the Alps and Appennines, and which is called the Genoese Riviera, is so well protected from cold winds by the mountains, and has such an equable and mild climate, as to rank at the head of all European winter health resorts for consumptives. The island of Sicily enjoys on its northern shore a very equable and mild, though rather humid climate, being protected on the south by high mountains from the hot south winds, and having in the north a large tract of salt water to warm the north winds. This part of the island is cooler in summer than the

southern part, which has no protection from the hot winds from Africa, and in summer is almost unbearable. In winter, however, the southern part of the island has rather a pleasant climate.

Sardinia differs from Sicily in that it has neither protection from the hot south winds nor from the cold north winds, which latter have not sufficient salt water to pass over to warm them before reaching the island. The consequence is that the climate is neither mild nor equable.

The following are the Italian health resorts and spas in alphabetical order.

ABANO is a thermal sulphur-bath, a few miles by rail from Padua, with several poor establishments and indifferent hotel accommodation. The temperature of the water is 185°, the climate and surrounding country exquisite, and the benefit to be derived from the baths enormous. Yet, with all these advantages, the place cannot be recommended as a resort for English people. It is a pity the people of the place do not keep the establishments better, and try to attract visitors.

ACQUI, near Alessandria, in Piedmont, is a thermal sulphur-bath, the waters of which have a temperature of 100° to 167° F. The German mud-bath system is imitated by the establishment officials, who, by means of divers, procure from the bottom of the well a quantity of *fanghi* (incrustation), with which

they cover the affected parts of the patients. Very soon a vapour exhales from the application, filling the room, and making everyone within uncomfortable. This lasts for nearly an hour, when the suffering patient cleanses himself in a mineral water-bath. "La Bollente" is the principal source used.

BATTAGLIA (St. Elene) is a thermal sulphur-spa on the railway from Padua to Ferrara, with very good arrangements, and exquisite scenery and climate. The temperature of the waters varies from 78° to 160° F. Count Victor Wimpffen has become proprietor of this spa, and is determined to improve the establishment, and make it a desirable place for English people. The waters are very useful in rheumatism, dyspepsia, and stiffened joints.

BORMIO (Worms) is one of the most lovely thermal spas in Europe, situated 4,460 feet above the level of the sea, on the Italian side of the Alps, at the top of the Valtellin, and at the foot of the Stelvio pass. It is called by the Italians "Il paradiso delle Donne." It is not very far from St. Moritz, in the Engadin, and is easily approached by regular conveyance from Colico, a town situated at the northern extremity of Lake Como, or similarly from Botzen, in the Tyrol, on the railway from Innsbrück to Verona. The waters are earthy, and of a temperature of 90° to 104° and higher; and the new bathing establishment, which is about 500 feet lower than

the old one, is most comfortably appointed and well managed. Paralysis, rheumatism, hysteria, and sterility, are the principal complaints that derive benefit from the use of these baths. The climate is very refreshing and dry, and much milder than that of the resorts on the northern side of the Alps.

CAGLIARI, the capital town of Sardinia, is situated at the head of the Gulf of Cagliari, on the south coast of the island, and is supplied with pure mountain water by an English company. The climate is tolerably good, but unfortunately there is no protection from the north-west winds, which blow with great force in winter. There is, however, a good protection from the north-east winds, afforded by the mountains which lie to the north-east of the city. The atmosphere is very moist, and the hotel accommodation poor.

CASTELLAMARE, on the south side of the beautiful Bay of Naples, possesses a number of thermal springs, four of which contain salts of iron, the principal being the "Acqua Ferrata"; four are saline, their chief ingredients being muriate and sulphate of soda and chloride of calcium; and four are sulphurous and chalybeate, containing sulphate of iron and a quantity of sulphuretted hydrogen. The "Acqua Media" is a good saline aperient, something like seltzer water. Chronic skin diseases,

gout, rheumatism, obesity, and indigestion are the chief complaints treated.

CASTROCARO, in Tuscany, is one of the principal iodo-bromated brines, and contains in sixteen ounces 404·86 grains of common salt, 0·08 of bromide of sodium, 1·20 of iodide of sodium, 21·22 of sulphate of soda, 5·66 of carbonate of lime, and 2·76 of carbonate of magnesia. These valuable waters are very useful in struma, and are becoming famous.

CATANIA is a large and handsome town at the foot of Mount Etna, in Sicily, with a delightful climate. Although rather too hot in summer, the maximum heat averaging in July 95°, as a winter resort for consumptives it has many attractions.

CHIANCIANO lies in the valley of Chiana, at an elevation of 1,800 feet, not far from Siena, in Tuscany, and possesses earthy waters strongly impregnated with lime, and having a temperature of 100° F.; also strong iron springs, and one muriated saline spring.

GENOA is excellently situated for a winter health station for consumptives, being well protected from the north, and enjoying summer weather at the same time that winter weather prevails on the other side of the Appennines, but it is badly drained and otherwise badly sanitated.

ISCHIA, a small island, lying an hour and a half's

sail from Naples, at the north side of the bay, possesses fourteen thermal salt springs, varying in temperature from 72° to 170°, and containing an unusual amount of carbonate of soda, and a large quantity of carbonic acid. The principal sources are "Capponi," "Gurgitello," "Citara," and "Acqua di Santa Restituta," all salt springs; "Bagno Fresco," an indifferent thermal, and "Olmitello," a thermal earthy water. There are excellent bathing establishments, and ample accommodation for visitors. More diseases are said to be benefited by a course of waters at Ischia than at any other spa, and this is probably not far from truth. Arenation is practised here, as already explained on page 29.

MONACO, a little town perched on a rocky peninsula all but surrounded by the sea, is situated midway between Nice and Mentone, in the Western Riviera, and enjoys a most delicious climate, being entirely protected from north winds by the mountains behind it. Were it not that this is now the only town in Europe where gaming-tables are permitted to exist publicly, it would be a very desirable winter residence for invalids, but at present it is far too lively for people seeking quiet and repose. Frost is rarely seen, and snow is quite a rarity.

MONTE CATINI, between Pistoja and Lucca, is the most important salt bath in Italy. The chief source is the "Terma Leopoldina," which contains in six-



teen ounces 168 grains of common salt, 0·96 of iodide of potassium, 5·12 of chloride of calcium, 4·50 of chloride of magnesium, 2·56 of sulphate of soda, 5·12 of sulphate of magnesia, 3·20 of carbonate of lime, 0·82 of carbonate of magnesia, and 0·08 of carbonate of protoxide of iron. The temperature is 92° F., and it is used largely in scrofula and gout. The "Tettuccio" contains much less common salt, and has a temperature of 81°. About four miles away is the grotto of *Monsumanno*, which is used as a *stufa* or hot-air bath by the patients at Monte Catini. It is a dark cave, which gets gradually hotter as you pass along it, until you reach the *inferno*, when a copious perspiration breaks out on the body. After remaining a short time here, dressed in proper bathing clothes, the patients are wrapped in blankets and driven back to Monte Catini.

NAPLES needs only to be mentioned in order to caution invalids against going anywhere near it, as it is about the filthiest place in Italy. Situated on a magnificent bay, surrounded by the most exquisite scenery, one naturally expects to find it a charming city. It is, on the contrary, as Dr. Bennet so aptly describes it, "the concentration of all unhygienic conditions." Says the same author, speaking of the fashionable quarter of the town: "On this shore eight public drains empty themselves into the sea; the largest of these drains is opposite one of the

chief hotels, and is often so offensive that those who are alive to these questions feel inclined to take a run in passing." Filthy and ragged natives fish in these sewers !

PALERMO is a beautiful and clean town on the north coast of Sicily, and enjoys a delicious climate, equable and mild, not too hot in summer, owing to the mountains on the south of it, nor too cold in winter, owing to the sea on the north. There are good hotels, the principal one, the "Trinacria," being one of the best in Italy, with clean and well-furnished rooms. This place is eminently suitable as a winter resort for consumptives, being bracing, not too moist, though more so than the Riviera stations, cheerful and clean.

PALLANZA, on Lake Maggiore, is situated 600 feet above the level of the sea, and has an excellent climate, being cool in summer and warm in winter. Owing to its beautiful situation and its equable climate, it is a very popular winter health station for consumptives.

PISA, in the valley of the Arno, has a remarkably humid and equable climate, and is well sheltered from the north. The mean annual temperature is 59°, that of winter 44°, spring 57°, summer 78°, and autumn 62°; and there are, on an average, sixty-two rainy days and one snowy day during the five winter months, most rain falling in November and least in

April. Hotel accommodation is good, but life is very dull.

**PISCIARELLI**, near Puteoli, is a thermal sulphur source, with a temperature of 157° F.

**PONTE SERAGLIO** is a small spa about fifteen miles from Lucca, at which are well known hot earthy baths, varying in temperature from 100° to 129° F., and very celebrated in chronic rheumatism and skin diseases.

**PORRETTA (La)** is situated at an elevation of 1,100 feet in the valley of the Reno, about three hours by rail from Florence, and has thermal springs of a temperature of 85° to 100° F., containing a large amount of common salt, and a quantity of sulphur-retted hydrogen. They are most useful in skin diseases.

**POZZUOLI**, on the north side of the Bay of Naples, possesses thermal waters of great repute in Naples. There are five sources, each containing a large quantity of common salt.

**PRESE (Le)** lies 3,000 feet above sea-level on the road from the Engadin into Italy, and has a wonderfully mild climate, with perfect protection from the north and east, and sulphur waters. Consumptives would find this a delightful spot for a winter's residence.

**REGOARO** is situated 1,400 feet above the level of the sea in a lovely valley near Vicenza, and pos-

sesses a good chalybeate spring and a cool summer climate. The establishment is good, and living cheap.

RIO is a small sulphur-spa in the island of Elba, of some repute in Tuscany.

ROME, like Madeira and Pisa, is humid and warm in winter and spring, but less equable than either. The mean annual temperature is 60°, that of winter 49°, spring 58°, summer 74°, and autumn 62°. The annual number of rainy days is 117, and the atmosphere generally peculiarly still during the winter, except when disturbed by the *Tramontana*, a harsh, strong north-east wind, which often blows for two or three days together. In spring sharp easterly gales blow, whilst at the same time the sun in the cloudless sky is very hot, so that those suffering from chest affections should depart before these extremes of heat and cold appear. The complaints benefited by a winter sojourn at Rome are chronic bronchitis and winter cough, with irritability of the mucous membrane of the lungs and slight expectoration, spasmodic asthma, chronic rheumatism, and gout.

SAN GERMANO is a small spa at which natural gas-baths are taken, consisting of carbonic acid and hydro-sulphuric acid. They are not very popular.

SAN GIULIANO is situated not far from Pisa, and possesses earthy waters of a temperature of 86° to

128°, and excellent bath arrangements. They are useful in chronic rheumatism, anchylosis, and neuralgia.

SAN REMO is an important town on the coast of the Western Riviera, about fifteen miles from Mentone, and with a very similar climate to that place. It suffers hardly at all from the mistral, and is slightly warmer than the neighbouring towns. The place is being wonderfully improved just now; fresh hotels are springing up, and sanitary laws are being put into force, which will greatly improve it as a winter health resort for consumptives.

SANTA RESTITUTA is the name of the place on the island of Ischia where *arenation* is mostly carried on as described on page 29.

SANTA CATERINA is situated three miles from Bormio, at an elevation of 5,600 feet, and possesses springs similar to those of St. Moritz in Switzerland. There is a very small establishment.

SPEZZIA, fifty miles from Genoa, on the coast, has a mild winter climate, but is not well sanitated.

VALDIERI is situated 3,400 feet above sea-level in the Col di Tendi branch of the Alps, about fifteen miles from Cuneo railway-station, in a beautifully wooded country, and has tolerably good thermal and cold sulphur-baths and good accommodation. The climate is cold but dry, and the season from

June to August. The temperature of the thermal waters varies from 78° to 147° F. The German mud-baths are imitated here in the same manner as at Acqui, and there is also another process adopted by which the affected part is treated with a quantity of the vegetable slime from low forms of vegetation which flourish in the hotter waters. This slime is called *muffe*, and is supposed to be very beneficial in skin affections, scrofula, and rheumatism.

VITERBO, a town situated forty-two miles north of Rome, has good sulphur-springs, which are quite neglected.

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## CHAPTER IX.

## HEALTH RESORTS OF SPAIN AND PORTUGAL.

THE climate of the Spanish Peninsula varies considerably in different localities, owing to the physical configuration of the surface. On the elevated table-land it is colder in winter and hotter in summer than is usual in the same latitude. Madrid, which is situated on the table-land, has a mean temperature in winter of  $47^{\circ}$ , in spring of  $65^{\circ}$ , in summer of  $86^{\circ}$ , and in autumn of  $66^{\circ}$  F., although during the hottest month the mean temperature sometimes reaches  $90^{\circ}$ , and in the coldest month falls as low as  $40^{\circ}$ . The sky is generally cloudless in summer on the table-land, and with but little rain, while in winter it rains and snows frequently. The north is the dampest part of the peninsula; the north-west the coldest and most stormy, where the full force of the *gallego* is felt; the south-east the most equable and delightful, perpetual spring clothing the face of the country with verdure all the year round; while the south-

west has an almost African climate, the hot dry wind, called the *solano*, often scorching and withering the vegetation, enfeebling the animal frame, spreading epidemic diseases, and bringing mosquitoes by the million. The west part of the peninsula is occupied mostly by the kingdom of Portugal, and has a mild but variable and moist climate. Winter, as a rule, is short and mild, and in many places never completely interrupts the course of vegetation.

The following are the health resorts and spas in alphabetical order :—

**ALZOLA**, the Spanish Vichy, is situated in a lovely gorge not far from San Sebastian, and has waters of a temperature of 87° F., which are useful in affections of the kidneys and bladder. The season is from June to November, and there are good hotels with large *tables d'hôte* and many English visitors.

**ARCHENA**, in Murcia, is a thermal sulphur spa, much thought of by the Spaniards. The waters have a temperature of 126·5° F., and the climate is delightful. For English people it cannot be recommended, as the place is badly sanitated and has no good hotels.

**AZORES** (The) are a small group of islands in the Atlantic, belonging to Portugal, with a delightful though humid climate, and a remarkable immunity from sickness. The vegetation is most luxuriant,



groves of lemon and orange trees growing close to the towns. The Portuguese use these islands as health resorts, and many English residents are always to be found at Santo Miguel, the capital town. The climate of these islands is more humid, relaxing, and equable than at Madeira, the mean annual temperature  $5^{\circ}$  lower, and that of winter  $2^{\circ}$  lower. The annual rainfall is 90 inches. Unfortunately the inhabitants of the towns and villages are too lazy to attempt any sanitary improvements, principally occupying themselves with the barter of images, crucifixes, indulgences, dispensations, relics, &c., and, consequently, what is naturally a most healthy spot runs a great risk of becoming just the reverse as the population increases.

CALDAS DE MONTBUY is a Catalonian spa not far from Barcelona, having several salt-springs of a temperature of  $158^{\circ}$ , which are very celebrated for rheumatism, sciatica, and wounds. The season is from May to July, and again in September and October.

CALDAS DE OVIEDO, in the north of Spain, possesses several indifferent thermal springs of a temperature of  $108^{\circ}$  F., which are used as baths and douches, and also drunk. There is a tolerably good establishment, with inhalation-rooms for inhaling nitrogen gas; and the place is salubrious, with good water and decent sanitation, which is somewhat rare in Spain.

CANARIES (The) lie about 250 miles nearer the equator than Madeira, and have pretty good hotel accommodation at Santa Cruz, the capital of the island of Teneriffe. The mean annual temperature of this town is 6° higher than at Funchal, but the climate is not nearly so equable, the difference between the mean temperature of winter and summer being 9° at Funchal and 12° at Santa Cruz. The mean annual temperature is 71°, that of winter 65°, spring 69°, summer 77°, and autumn 74°. The annual rainfall is less than at Madeira, and the atmosphere is drier and less relaxing.

CARATRACA, not far from Malaga, in Andalusia, is one of the principal watering-places in Spain, being surrounded by beautiful scenery, and having a delicious climate and plenty of amusement. The waters are weak sulphur ones of a temperature of 66°, and have a great reputation in skin complaints and scrofula. The season is from June to September.

CARBALLO is situated near Corunna, in the north-west corner of Galicia, and possesses good sulphurous springs of a temperature of 77° to 97° F., but with no arrangements suitable for English visitors. The climate is about the most uncomfortable in Spain.

CERDELA is a small cold sulphur-spa, close to Fitero, celebrated for the treatment of skin-diseases.

CESTONA is a thermal salt-bath, not far from San Sebastian, on the north side of the Pyrenees, and

has good hotels and arrangements for drinking, bathing, and the douche-bath. The temperature of the waters is 88° to 94°, and the principal ingredients are common salt, sulphate of lime, and sulphate of soda, which makes them purgative. They are useful in rheumatism, indigestion, and bronchial affections.

CORTEGADA is a small sulphur-spa near Orense, in Galicia, with waters having a temperature of 84° to 91° F. The bathing arrangements are very poor indeed.

CUNTIS is a small sulphur-spa near Pontevedra, in Galicia, with very poor accommodation and no good hotel. The temperature of the waters is 68° to 140° F.

FITERO is a rather celebrated Spanish spa close to the borders of Navarre and Castile, possessing thermal earthy waters having a temperature of 117° F. The chief complaints treated are rheumatism and paralysis, and it is said that sufferers from these maladies derive great benefit from a course of the treatment adopted.

LEDESMA is rather a large town not far from Salamanca in Leon, and possesses good sulphur-waters of a temperature of 86° to 122° F., and handsome establishments for bathing, &c. It is one of the best, cleanest, and most frequented of Spanish baths.

LISBON lies on the north shore of the Tagus, about

nine miles from the sea, and is built on a series of hills. The fashionable quarter of Buenos Ayres, where most of the foreigners reside, is now well sanitated and lighted, and very suitable as a winter health resort for invalids. The climate is warm, humid, and variable, the mean annual temperature being about  $61^{\circ}$ , that of winter  $54^{\circ}$ , summer  $68^{\circ}$ , spring  $59^{\circ}$ , and autumn  $59^{\circ}$ . The minimum temperature of the year is rarely under  $35^{\circ}$ , but frost occasionally occurs in December. The maximum annual heat in the sun at the end of August is about  $138^{\circ}$  at 2 P.M. Rain falls generally in heavy showers of short duration, and the number of rainy days in the year is sixty-three. Chronic winter cough, with irritable mucous membrane of the lungs, is greatly relieved by a winter's residence here.

MADEIRA belongs to Portugal, and has long had a great reputation as a winter health resort for consumptives, although just now it is suffering from change of fashion. The climate of Madeira is unquestionably one of the most equable that we know of, the mean range of temperature during winter and spring being  $15^{\circ}$  in twenty-four hours. The atmosphere, however, is exceedingly humid and relaxing, so much so that steel instruments quickly rust if left to themselves, and the vegetation is in consequence most luxuriant. The mean annual temperature at Funchal, the capital, is  $66.93^{\circ}$ . The mean maximum temperature in the day is in winter

68·66°, summer 80°, spring 74·59°, and autumn 76·33°. The mean minimum temperature in the night is in winter 55°, summer 65°, spring 57·50°, and autumn 61·66°. The mean daily range is in winter 7·60°, summer 8·67°, spring 9·50°, and autumn 8·33°. The climate of Madeira is very suitable to cases of dry chronic bronchitis, and chronic winter-cough, with irritability of the mucous membrane of the lungs, and very slight expectoration, chronic laryngeal irritation, and spasmodic asthma.

MAJORCA, the largest of the Balearic group of islands, is a favourite resort of the Spanish, who consider it a very valuable health resort. The climate is mild and equable, the mountains in the north affording protection against the winter cold, and the sea-breezes cooling the atmosphere in summer. The great drawback to the place is its dampness and its liability to mists and violent winds, which latter, however, are little felt at Palma, the capital town, owing to its sheltered situation. This snug little town is very quiet, but clean and well attended to, and accommodation is not so bad as might be expected.

MALAGA, on the south coast of Andalusia, not very far from Gibraltar, is a very celebrated winter resort for consumptive patients requiring a warm, dry, tonic climate. It is well protected on the north, west, and east by the high mountains of

Ronda, Antequerra, and the Sierra Nevada. The Alameda, or fashionable promenade, facing the sea, is a very delightful walk at all times, except when the *terral* (north-west) or *levante* winds are blowing. The English visitor to Malaga should be careful to engage a bedroom looking south over the Alameda, as the fresh air comes from that direction, while the bad smells abound on the northern sides of the hotels, and also there is a difference of  $10^{\circ}$  between the south and the north aspect. The sanitation of the town is unfortunately still very poor, though much better than it used to be; some of the houses have no drainage at all, but these are principally in the old town. The climate is very dry, warm, and equable, the thermometer varying little during the day, except when the *terral* or *levante* are blowing, when the changes in the temperature are often rapid and great. The annual rainfall is very small, and the total number of rainy days in the year 29. The mean annual temperature is  $65^{\circ}$ , that of winter  $55^{\circ}$ , spring  $68^{\circ}$ , summer  $78^{\circ}$ , and autumn  $60^{\circ}$ , but at sunset there is always a very sudden decrease in temperature accompanied with dew.

ONTANEDA, on the north of Spain, near Santander, has several sulphur springs of a temperature of  $77^{\circ}$  to  $100^{\circ}$  F., but no suitable accommodation for English people.

ORMEZTAGUY is not far from Tolosa, in Biscay,

and has several cold sulphur springs, but no very suitable arrangements for utilising them.

PANTICOSA (Penticouse) is about the highest bath in Europe, being situated 5,000 feet above the level of the sea, close to the French frontier on the southern slope of the Pyrenees. It possesses several indifferent thermal springs of a temperature of 77° to 92° F., situated a few miles from the village along a narrow gorge called the Staircase. The thermal establishment is here on the shore of a small lake into which beautiful cascades fall, and the accommodation is tolerably good. The climate is very dry and mild, and it is to this, probably, that the place owes its reputation as a phthisis-cure, and not to the waters, which are but slightly mineralised.

SACEDON, on the Tagus, near Madrid, is a popular spa, with earthy waters of a temperature of 85°, containing plenty of sulphate of lime. They are useful for rheumatism and skin affections.

SANTA AGUEDA is situated twelve miles from Alzola, not far from San Sebastian, and possesses sulphur springs and chalybeates. It is a very fashionable spa, with a beautiful climate and a clean and comfortable establishment.

TRILLO, near Madrid, on the Tagus, is a very popular bath, possessing salt springs of a temperature of 85°, the waters of which are drunk and

used for bathing. They are said to be very beneficial in rheumatism, paralysis, syphilis, and diseased joints.

VALENCIA, a large city on the east coast of Spain, has an exceptionally good winter climate, with some very good hotels, but the town is so badly sanitated, and the hot dry east winds from the Mediterranean so scorching, that it is very unsuitable for a winter health resort for consumptives.

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## CHAPTER X.

## EGYPT.

THERE was a time when Egypt was as much sought after by the Romans as the Riviera stations are now by the British, and the reason of this is not far to seek. Egypt may be, for the sake of convenience, divided into three portions, the upper, middle, and lower, and each of these will be found to have a different kind of climate to the other two. Thus, at Alexandria, on the coast of the Mediterranean, in Lower Egypt, the climate is humid and hot, there is an abundant rainfall, occurring between October and February, of about 18 inches, and the mean annual temperature is 68° F., that of autumn being 87°, while in summer the thermometer frequently rises as high as 115° in the shade. The whole of the Delta has exactly the same kind of climate as Alexandria, being very unhealthy, and often resembling a huge steam bath. At Cairo, in Middle Egypt, the climate is considerably better than at Alexandria, being somewhat hotter, very much drier, and divided into the hot

season from March to October, and the cold season from October to March. The number of rainy days in the year is only nine or ten, and the rainfall scarcely an inch. The mean annual temperature is 70°, that of January 55°, February 59°, March 64°, April 71°, May 77°, June 82°, July 84°, August 84°, September 76°, October 75°, November 66°, and December 59°. The mean temperature of the cold season is 62°, and it is during this period that invalids should visit Middle Egypt. The lowest temperature in January is 37° in the day-time, and 29° at night. There is often at other times of the year a difference of 30° between the temperature of night-time and day-time, owing to the fall of dew, the influence of the north wind, and the remarkably clear atmosphere, which is so favourable to the radiation of heat from the surface of the earth. Frost and snow are almost unknown. The principal winds are the cool north wind, which blows for eight months of the year; and the *simoon*, or *khamsin*, which is a hot southerly wind, and prevails from March to the end of June, filling the air with a cloud of impalpable sand, and scorching both animal and vegetable nature. Upper Egypt is reached now by rail as well as by boat from Cairo, but the latter is far preferable to the former mode of travelling in this district. The climate becomes gradually hotter and drier after leaving Cairo and proceeding up the Nile, until, at last, between

Assouan and the second cataract, it is about the driest climate in the world, and also wonderfully tonic and exciting. February is the coldest month, being  $5^{\circ}$  higher in temperature than at Cairo at the same time. The great drawback to the climate is the sudden and dangerous decrease of temperature after sunset, accompanied by a profuse fall of dew ; but this need not trouble one if care be taken to keep indoors after dusk, and to *always* wear flannel next the skin. This climate is very well adapted in winter for cases of phthisis in the early stage, chronic bronchitis, with profuse expectoration, and Bright's disease of the kidneys, but should be avoided by those who have any disposition to congestive diseases. The value of the climate becomes less as we proceed down the Nile to Cairo, and after leaving that city, gradually becomes, not only worthless, but in most cases positively harmful as Alexandria is approached.

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## I N D E X.

- AACHEN**, 108.  
**Abano**, 161.  
**Abrest**, 73.  
**Acqui**, 161.  
**Adelheidsquelle** of Heilbrunn, 123.  
**Adriatic Sea**, amount of salt in, 22.  
**Aërated Water**, 40.  
**Æsculap Bitter Water**, 137.  
**Ague** theory of immunity from phthisis, 5.  
**Aix-la-chapelle**, 108.  
**Aix-les-bains**, 73.  
**Ajaccio**, 75.  
**Alexandria**, 182.  
**Alexisbad**, 109.  
**Algeria**, 72.  
**Algiers**, 75.  
**Alisbrunnen**, 150.  
**Allevard**, 76.  
**Altitude**, its relation to atmospheric pressure and temperature, 4.  
**Altitude** theory of immunity from phthisis, 4-5.  
**Altwasser**, 109.  
**Alveneu**, 150.  
**Alzola**, 173.  
**Amélie-les-bains**, 76.  
**Amphion**, 77.  
**Anæmia**, treatment of, 39.  
**Andes**, phthisis in the, 3.  
**Aperient Mineral Waters**, 27.  
**Appollinarisberg**, 110.  
**Apoplexy**, treatment of, 36.  
**Arcachon**, 77.  
**Archena**, 173.  
**Arenation** at Ischia, 29.  
**Arnstadt**, 110.  
**Ashby-de-la-Zouch**, 53.  
**Askern**, 53.  
**Aspect**, importance of in phthisis, 5.  
**Asthma**, treatment of, 9-37.  
**Atlantic Ocean**, amount of salt in, 22.  
**Atmosphere**, purity of, essential to health, 5.  
**Atmospheric Impurities**, 6-7.  
**Atmospheric influence** on the human system, 6.  
**Atmospheric temperature** and pressure in relation to altitude, 4.  
**Atmospheric temperature**, variations of, 8.  
**Aussee**, 110.  
**Australia**, 10.  
**Austria**, climate of, 108.  
**Austrian Health Resorts and Spas**, 104-148.

- Auteuil, 78.  
 Ax, 78.  
 Azoff, salt in the sea of, 22.  
 Azores, 173.
- BADEN-BADEN**, 111.  
 Baden in Austria, 111.  
 Baden in Switzerland, 150.  
 Badenweiler, 112.  
 Bagnères-de-Bigorres, 78.  
 Bagnères-de-Luchon, 79.  
 Bagnolles-de-l'Orne, 80.  
 Bains, 80.  
 Balarnoc-les-Bains, 80.  
 Balearic Isles, 173.  
 Baltic Sea, amount of salt in, 22.  
 Barèges, 80.  
 Barègine, 81.  
 Barmouth, 53.  
 Baslow, 53.  
 Bassère (La), 81.  
 Bastia, 81.  
 Bath, 54.  
 Bath Life, 41-49.  
 Baths, cold water, 15.  
 „ Douch, 47.  
 „ Drop, 47.  
 „ Hot Air, 15-16.  
 „ Hot Water, 15.  
 „ Mud, 47.  
 „ Peat or Moor, 47.  
 „ Pine-leaf, 48.  
 „ Shower, 47.  
 „ Temperatures of, 14-15.  
 „ Use of, 13-16-17.  
 „ Vapour, 16.  
 „ Whey, 48.
- Battaglia, 162.  
 Bauche (La), 82.  
 Belgian Health Resorts and Spas, 73-106.  
 Belgium, climate of, 72.  
 Berck-sur-mèr, 82.  
 „ „ 112.
- Beulah Spa, 54.  
 Bex, 82.  
 Biarritz, 82.  
 Bilin, 113.  
 Bingen, 113.  
 Birmensdorf, 150.  
 Biskra, 83.  
 Bismuth in Dyspepsia, 34.  
 Black Sea, amount of salt in, 22.  
 Bocklet, 114.  
 Boll (Bollbad), 114.  
 Bonchurch, 63.  
 Boppard, 114.  
 Bormio, 162.  
 Bourbon Lancy, 83.  
 Bourbon l'Arohambault, 83.  
 Bourbonne-les-bains, 83.  
 Bourboule, La, 84.  
 Bournemouth, 10, 55.  
 Bridge of Allan, 55.  
 Bridlington Quay, 55.  
 Brighton, 56.  
 Brine Waters, 28.  
 British Islands, climate of, 64.  
 British Health Resorts and Spas, 64-70.  
 Bronchitis, treatment of, 9, 37.  
 Brückenau, 114.  
 Burtscheid, 115.  
 Bussang, 115.  
 Buxton, 56.
- CAGLIARI**, 163.  
 Cairo, 182-3.  
 Caldas de Montbuy, 174.  
 Caldas de Oviedo, 174.  
 Calvert's Carbolic Tablets, 45.  
 Canary Islands, climate of, 175.  
 Cannes, 10, 84.  
 Cannet (Le), 85.  
 Cannstadt, 115.  
 Carabacel, 98.  
 Caratraca, 175.

- Carballo, 175.  
 Carbonated Water, artificial, 40.  
 Carbonated Water, natural, 19, 20.  
 Carbolic Soap, 41.  
 Carlsbad, 126.  
 Caspian Sea, amount of salt in, 22.  
 Castellamare, 163.  
 Castrocaro, 164.  
 Catania, 164.  
 Canterets, 85.  
 Cerdela, 175.  
 Cestona, 175.  
 Challes, 86.  
 Chalybeate Waters, 30.  
 Change of Air, 6.  
 Channel Islands, climate of, 58, 60.  
 Chaudefontaine, 87.  
 Chaudes Aignes, 87.  
 Cheltenham, 56.  
 Cherry Rock Spa, 57.  
 Chianciano, 164.  
 Chlorosis, treatment of, 39.  
 Chocolate as a beverage, 42, 43.  
 Chorea, treatment of, 40.  
 Cimiez, 97.  
 Clifton, 57.  
 Climate, equability of, 8.  
 Climate, its influence on phthisis, 1.  
 Climates, dry and moist, 8, 9.  
 Clothing, 10.  
 Coal-tar Soap, 41.  
 Cocoa as a beverage, 43.  
 Cod-liver Oil in Phthisis, 37.  
 Coffee as a beverage, 42.  
 Colberg, 115.  
 Cold theory of immunity from Phthisis, 5.  
 Cold-water cure, 46.  
 Constipation of the Bowels, treatment of, 35.  
 Consumption of the Lungs, its characteristics and prevalence, 1, 2.  
 Contrexeville, 87.  
 Corsica, climate of, 73.  
 Cortegada, 176.  
 Cove, 57.  
 Cransac, 87.  
 Cronthal, 115.  
 Cuntis, 176.  
 DAVOS-AM-PLATZ, 3, 151.  
 Davos Doiffi, 151.  
 Dawlish, 57.  
 Dax, 88.  
 Delphi, Castalian Spring at, 23.  
 Diabetes, treatment of, 37.  
 Diarrhoea, treatment of, 35.  
 Diet, continental, 43.  
 Dyspepsia, treatment of, 32.  
 Drainage, defective, 5.  
 Droitwich, 58.  
 Driburg, 116.  
 Dürkheim, 116.  
 EASTBOURNE, 58.  
 Eaux Bonnes, 88.  
 Eaux Chaudes, 89.  
 Egypt, climate of, 10, 17, 182.  
 Eichwald, 116.  
 Eilsen, 116.  
 Elmen, 116.  
 Elster, 117.  
 Ems, 117.  
 Engadin, phthisis mortality in the, 3.  
 Engelberg, 152.  
 Enghien-les-bains, 89.  
 Epsom Spa, 58.  
 Escaldas, 89.  
 Evians-les-bains, 89.  
 FACHINGEN, 119.  
 Fideris, 152.  
 Fitero, 176.

- Flinsberg, 119.**  
**Forges-les-eaux, 90.**  
**France, climate of, 71.**  
**Frankenhäusen, 119.**  
**Franzensbad, 47, 119.**  
**Freienwalde, 120.**  
**French Health Resorts and Spas, 73-106.**  
**Friedrichsall, 120.**  
**Füred, 120.**  
  
**GASTEIN, 120.**  
**Geilnau, 121.**  
**Genoa, 164.**  
**German Health Resorts and Spas, 108-148.**  
**German Ocean, amount of salt in, 22.**  
**Germany, Climate of, 107.**  
**Geysers, in Iceland, 23.**  
**Gibraltar, phthisis statistics at, 2.**  
**Giesshübel, 121.**  
**Gilsland Spa, 58.**  
**Ginger in Dyspepsia, 33.**  
**Gleichenberg, 121.**  
**Goczalkourtz, 122.**  
**Godesberg, 122.**  
**Gout, treatment of, 40.**  
**Grange, 58.**  
**Grape Cure at Bingen, 113.**  
**Gravel, treatment of, 36.**  
**Griesbach, 122.**  
**Guagno, 90.**  
**Guernsey, 59.**  
**Guitera, 90.**  
**Gurnigel, 152.**  
  
**HÆMOPTYSIS, treatment of, 5, 38.**  
**Hall, in Austria, 123.**  
**Hall, in Tyrol, 123.**  
**Hamburg, phthisis mortality at, 3.**  
**Hammam Meskoutin, 90.**  
**Harrogate, 59.**
- Hartfel, 60.**  
**Hartzburg, 123.**  
**Hastings, 10, 60.**  
**Haute Rive, 91.**  
**Hechingen, 123.**  
**Heiden, 152.**  
**Heilbrunn, 123.**  
**Heilbrunnen, 123.**  
**Heppinjen, 123.**  
**Heustrich, 153.**  
**Homburg, 123.**  
**Hubertusbad, 124.**  
**Hunyadi Janos Water, 137.**  
**Hydrochloric Acid in Water, 23.**  
**Hydropathy, 46.**  
**Hyères, 9, 10, 91.**  
**Hysteria, treatment of, 40.**  
  
**ILKLEY, 61.**  
**Inselbad, 124.**  
**Interlachen, 153.**  
**Iron Waters, 30.**  
**Iron Wine and Beef Tea, 38, 39, 40.**  
**Ischia, 29, 164.**  
**Ischl, 125.**  
**Italian Health Resorts and Spas, 161-170.**  
**Italy, climate of, 159, 160.**  
**Iwonicz, 125.**  
**Jersey, 61.**  
**Johannisbad, 125.**  
**Johannisberg, 125.**  
  
**KAINZENBAD, 125.**  
**Karlsbad, 126.**  
**Khirgis Steppes, 4.**  
**Kidney Disorders, treatment of, 36.**  
**Kissingen, 127.**  
**Königsworth, 128.**  
**Kösen, 129.**  
**Koumiss Cure for Phthisis, 4, 49.**  
**Krankenheim, 129.**

- Kreuth, 129.  
 Kreuznach, 129.  
 Kronthal, 130.
- LANDECK, 130.**  
 Langenbrücken, 131.  
 Laubbach, 131.  
 Lavey, 91.  
 Leamington, 61.  
 Ledesma, 176.  
 Leucorrhœa, treatment of,  
 39.  
 Lenkerbad (Lenk), 153.  
 Liebenstein, 131.  
 Liebenzell, 132.  
 Lippspringe, 132.  
 Lisbon, 176.  
 Liver Disorders, treatment  
 of, 36.  
 Lobenstein, 132.  
 London, rainy days at, 10.  
 Longchamps, 92.  
 Luhatschowitz, 132.  
 Lung Diseases, treatment of,  
 9, 37.  
 Luxeuil, 92.  
 Lytham, 61.
- MADEIRA, 9, 10, 177.**  
 Madrid, 10.  
 Majorca, 178.  
 Malaga, 10, 178.  
 Malarious Emanations, 5, 6.  
 Mallow, 62.  
 Malmédy, 133.  
 Malt Extract in Dyspepsia,  
 34.  
 Malvern, 62.  
 Marienbad, 47, 133.  
 Margate, 62.  
 Marlioz, 92.  
 Marseilles, phthisis mortality  
 at, 3.  
 Matlock, 62.  
 Mediterranean, amount of  
 salt in the, 22.
- Mediterranean, equability of  
 climate of, 22.  
 Mehadia, 134.  
 Meinberg, 134.  
 Melksham, 63.  
 Mentone, 92.  
 Meran, 134.  
 Mergentheim, 134.  
 Milk, effervescing, 48.  
 Mineral Waters:—  
   Alkaline Acidulous, 25.  
   Alkaline Muriated Acidu-  
   lous, 26.  
   Alkaline Saline, 26.  
   Bitter, 26.  
   Brine, 28.  
   Chalybeate, 30.  
   Earthy, 29.  
   Indifferent Thermal, 30.  
   Iodo-bromated - muriated,  
   27.  
   Simple Muriated, 27.  
   Sulphurous, 31.  
   Temperature of, 24, 23.
- Moffatt, 63.  
 Monaco, 165.  
 Mont Dore, 95.  
 Monte Catini, 165.  
 Montpellier, 96.  
 Montreux, 154.  
 Münster-am-Stein, 135.  
 Mürren, 154.
- NAPLES, 166.**  
 Nassau, 135.  
 Nauheim, 135.  
 Neundorf, 136.  
 Neris, 96.  
 Neuenahr, 136.  
 Neuhaus, 136.  
 Neuralgia, treatment of, 40.  
 Nice, 9, 96.  
 Niederbronn, 136.  
 Niederlangenau, 136.  
 North Sea, salt in, 22.



OFEN, 136.  
 Olette, 98.  
 Ontaneda, 179.  
 Orezza, 98.  
 Ormeztaguay, 179.  
 Oxygen and Ozone in the  
 Atmosphere, 6, 7.

PALERMO, 167.  
 Pallanza, 167.  
 Panticosa, 180.  
 Paralysis, treatment of, 40.  
 Paris, climate of, 72.  
 Passy, 99.  
 Pau, 9, 10, 99.  
 Penzance, 63.  
 Pejo, 137.  
 Peptonic Tablets in Dyspep-  
 sia, 34.  
 Perspiration, process of, 13.  
 Petersthal, 137.  
 Pfäfers, 137.  
 Phthisis :—  
 Immunity from, on high  
 ground, 5.  
 Immunity from, in cold  
 climates, 5.  
 Immunity from, in Ague  
 districts, 5.  
 Its characteristics and  
 prevalence, 1-4.  
 Mortality in Gibraltar, 2.  
 Mortality in Switzerland, 3.  
 Mortality in the Andes, 3.  
 Treatment of, 36.  
 Pierrefonds, 100.  
 Pietrapolo, 100.  
 Piles, treatment of, 36.  
 Pisa, 8, 10, 167.  
 Pisciarelli, 168.  
 Plombières, 100.  
 Ponte Seraglio, 168.  
 Porretta, 168.  
 Portugal, climate of, 173.  
 Pongues, 100.  
 Pozzuoli, 168.

Prese (Le), 168.  
 Preste (La), 100.  
 Püllna, 138.  
 Purgative Waters, 27.  
 Purton Spa, 63.  
 Puzichello, 101.  
 Pyrmont, 138.

QUEENSTOWN, 10, 57.

RABBI, 139.  
 Ragatz, 139.  
 Rainfalls, statistics of, 9, 10.  
 Recoaro, 168.  
 Redruth, 64.  
 Rehme, 139.  
 Reichenhall, 140.  
 Reinerz, 14C.  
 Reutlingen, 140.  
 Rheinfeld, 154.  
 Rheumatism, treatment of,  
 40.  
 Rhine, climate of, 107.  
 Rickets, treatment of, 39.  
 Rigi-Kaltbad, 154.  
 Rigi-Scheideck, 154.  
 Rio, 169.  
 Rippoldsau, 140.  
 Riviera, 92, 160, 165.  
 Rohitsch, 140.  
 Roisdorf, 141.  
 Rolandseck, 141.  
 Römerbad, 141.  
 Rosenheim, 141.  
 Rome, 10, 169.  
 Rothesay, 64.  
 Royat, 101.

SACEDON, 180.  
 Saidschütz, 141.  
 Saint Amand-les-eaux, 47,  
 101.  
 Saint Bernard Mountain,  
 freedom from phthisis on, 3.  
 Saint Christau, 101.  
 „ Gervais, 102.

- Saint Leonards-on-Sea, 60.  
 „ Moritz, 155.  
 „ Nectaire, 102.  
 „ Sauveur, 102.  
 „ Yorre, 102.  
 Salzbrunn, 142.  
 Salzhausen, 142.  
 Salzungen, 142.  
 San Bernardino, 154.  
 „ Germano, 169.  
 „ Giuliano, 169.  
 „ Remo, 170.  
 Sanitary Condition of Health  
 Resorts, 44.  
 Santa Aqueda,  
 „ Caterina, 170.  
 „ Restituta, 170.  
 Sardinia, climate of, 161, 163.  
 Saxon, 156.  
 Scarborough, 64.  
 Schinznach, 157.  
 Schlangenbad, 142.  
 Schmalkalden, 143.  
 Schwalbach, 143.  
 Schwalheim, 143.  
 Scilly Isles, climate of, 52.  
 Scrofula, treatment of, 38.  
 Sea Bathing, 28.  
 Sebastiansweiler, 143.  
 Seidlitz, 143.  
 Selters (Seltzers), 144.  
 Shap, 64.  
 Shelfanger Spa, 65.  
 Siberia, Irkutsk spring in, 23.  
 Sicily, climate of, 160.  
 Sidmouth, 66.  
 Skin Diseases, treatment of,  
 40.  
 Soden, near Aschaffenburg,  
 145.  
 Soden, on the Taunus, 144.  
 Soulmatt, 102.  
 Southport, 66.  
 Spa, in Belgium, 103.  
 Spa Expenses, 44.  
 „ Life, 41-49.  
 Spa Physicians, 45.  
 Spain, climate of, 172.  
 Spanish Health Resorts and  
 Spas, 172-181.  
 Spezzia, 170.  
 Spinal Affections, treatment  
 of, 40.  
 Stachelberg, 157.  
 Strathpeffer, 66.  
 Struma, treatment of, 38.  
 Stubnya, 145.  
 Styx in Arcadia, 23.  
 Suderode, 145.  
 Sulza, 145.  
 Sun, its influence on the  
 atmosphere, 7.  
 Swiss Health Resorts and  
 Spas, 150-158.  
 Switzerland, climate of, 149.  
 Switzerland, phthisis mor-  
 tality in, 3.  
 TARASP, 157.  
 Tea as a Beverage, 42, 43.  
 Teinach, 145.  
 Temperature :—  
 Importance of, 4, 8.  
 Of Baths, 14, 16, 17.  
 Of the Atmosphere, 4, 8.  
 Of the Human Body, 14.  
 Variations in, 8.  
 Tenby, 67.  
 Teplitz, 47, 145.  
 Thermal Springs, 24.  
 Thorp Arch, 67.  
 Tönnisstein, 146.  
 Torquay, 10, 67.  
 Trefriw, 68.  
 Trillo, 180.  
 Tunbridge Wells, 68.  
 URIAGE, 104.  
 Urijino in Japan, 23.  
 VAISSE, 104.  
 Valdieri, 170.

- Valencia**, 181.  
**Vals**, 104.  
**Vegetation**, its effects on the atmosphere, 7.  
**Venice**, 10.  
**Ventilation** in towns, 6.  
**Ventnor**, 10, 68.  
**Vernet (Le)**, 105.  
**Vevey**, 158.  
**Villefranche**, 98.  
**Viterbo**, 171.  
**Vittel**, 106.
- WABMBRUNN**, 146.  
**Wassenach**, 146.  
**Water** :—  
   Carbonic Acid in, 19.  
   Common Salt in, 22.  
   Constituents of, 18.  
   External Use of, 13, 17.  
   Impurities in, 18.  
   Internal Use of, 18.  
   Mineral, 18.  
   Properties and Uses of, 12.
- Water (cont.)** :  
   Sulphuretted Hydrogen in, 21,  
   Supply important in Phthisis, 12.  
**Weilbach**, 146.  
**Weissbad**, 158.  
**Weissenburg**, 158.  
**Wemyss Bay**, 69.  
**Whey Cure**, 48.  
**Wiesbaden**, 48, 146.  
**Wildbad**, 147.  
**Wildeggen**, 158.  
**Wildungen**, 147.  
**Winds**, force and direction of, 10.  
**Wittekind**, 148.  
**Woodhall Spa**, 69.  
**Worms**, treatment of, 36.  
**Worthing**, 10, 70.  
**Wyh**, 158.
- ZERMATT**, 158.

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